RPS Planning, Transport and Environment

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Scheme Title A30, Cornwall	Details Archaeological Investigation along Indian Queens Bypass
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County Cornwall.	
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A30 Project, Cornwall - Archaeological Investigations along the route of the Indian Queens Bypass 1992-1994

Assessment and Updated Project Design
Volume IV

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VOLUME IV

Volume IV represents the fourth part of a four volume document which describes and assesses the results of work carried out on the A30 Project in Cornwall. This work was carried out along the route of the Fraddon to Indian Queens bypass and was carried out between 1992-1994.

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THE UPDATED PROJECT DESIGN

18.1 Overall Aims and Objectives of the A30 Project -Research strategy in 1992

In 1992 the key objectives of this archaeological study were presented as the following:

- To provide an appropriate record of archaeological remains affected by the construction of the A30 Fraddon-Indian Queens road improvement scheme.
- To develop an understanding of prehistoric and historic landscape development within an area of lowland Cornwall whose archaeological potential was unknown.

The above aims were guided by a set of both general and specific research priorities which highlighted certain areas of study where knowledge was patchy within the lowland context. These were listed as: the study of settlement, land use and environment; the need to establish an environmental sequence in lowland Cornwall; the identification and excavation of prehistoric field systems and settlement in lowland Cornwall; an appraisal of the archaeological potential of lowland Cornwall and the analysis of medieval and early medieval field systems and trackways (Rose, Herring and Nowakowski 1992, 11). Research strategies for individual sites within the project area were formulated using this landscape-approach and have been set out in the relevant sections above.

18.1.1 Overall Historic Character of the Project Area

The project area comprises two major land-use zones which have been defined in terms of their historic land use by the Cornwall Landscape Assessment carried out in 1994 (Cornwall County Council, Countryside Commission and Cornwall Archaeological Unit 1996). These landscape zones are **anciently enclosed land**, and **recently enclosed land**: the equivalent of the "historic farmland" and "historic moorland" of the overall project design (see introduction). The criteria for each classification has been clearly set out in the Landscape Assessment (*ibid.*), but for the purpose of this study can be summarised as follows.

Anciently enclosed land (AEL) defines enclosed farming landscapes and settlements documented before the 17th century AD and includes parcels and/or patches of irregular field patterns which may be medieval or prehistoric in origin. Early trackways and routes which link scattered hamlets, church towns and larger villages are also included in this zone. Most of the land surrounding and associated with the small farmsteads within the low-lying areas of the study area falls into this category.

Recently enclosed land (REL) represents enclosure which took place from the 17th century up to the present. Enclosures of this date - the post-medieval and early modern periods - are distinctive by their rectilinear character. Enclosed land during this period has

usually been reclaimed from medieval commons and rough ground and maybe in high, exposed or poorly drained places. Routes and roads are generally very linear in character and settlement comprises isolated, dispersed farmsteads and smallholdings. Elevated areas of the project area on Higher Fraddon, the edge of Goss Moor as well as the low-lying poorly drained areas such as The Kelliers and around Toldish fall into this historic land use category.

18.2 Summary statement of Potential

18.2.1 A revision of the overall research aims - General Aims Achieved

On the completion of the fieldwork, archiving and assessment stages of this project a number of general as well as specific research objectives have been achieved and are summarised below:

- A chronological appraisal of the archaeological and historical resource of the project area has been achieved. This has complemented the documentary record and broadened understanding of the history of occupation and settlement in the area. This archaeological work has contributed considerable detail concerning the historical evolution of a tract of Cornish countryside which had previously received little attention.
- A range of environmental data has been recovered from deposits dating from the Early Neolithic to the late Roman periods. These comprise archaeobotanical material with pollen and charcoal - all of which can be brought together to construct a vegetational history of the project area. Given the absence of deep peat deposits, it will be especially important to integrate the results of this analysis into a synthetic account which can be linked to period and monument class. It is anticipated that a general discussion outlining the processes of local change can be produced.
- This study has shown that systematic fieldwork based on a clear set of research priorities as well as a degree of pragmatism, has made it possible to demonstrate the wealth, depth and broad range of archaeological potential within a lowland context.
- Whilst excavations of individual sites provide a wealth of chronological and contextual data about specific places within a landscape, one of the most significant results of this study has been the opportunity to appraise the broader environmental, cultural and historical contexts in which such sites have developed. The adoption of a landscape-approach to a development scheme such as this has allowed the adoption of a view which looks beyond the confines of particular sites. This in turn has greatly broadened our understanding of the historical character of the project area.

In conclusion the project has provided a methodological framework which can be adapted and applied to similar development schemes.

18.2.2 Overall Aims and Objectives - Local, Regional and National Research Priorities

Above a series of general aims achieved by the A30 project have been presented. These, together with specific aims have the potential to meet some of the original project objectives as well as offer new avenues of research. All can be linked into a hierarchy of research priorities: local, regional and national. A summary of these priorities are presented below and have guided the identification of specific aims which in turn are presented in more detail in section 18.6. For ease of cross-referencing and identification the three interconnecting research strategies are presented in a form as recommended by English Heritage's "Management of Archaeological Projects" (MAP2).

18.3 Local Research Aims

"The Archaeology of the St. Austell China Clay Area" by Peter Herring and John Smith produced in 1991 is a substantial record on the character of the archaeological resource of the distinctive cultural landscape of the upland area known as Hensbarrow. The area studied during the A30 Project lies just to the north and on the margins of this geographical zone and the results achieved by this project can be measured in terms of their contribution to documented local knowledge as presented in the report by Herring and Smith (*ibid.*). The range of data collated during the A30 Project will contribute to a broader understanding of local knowledge both in qualitative and quantitative terms and specifically has two major contributions: local chronologies and history of land-use and historic landscape development.

18.3.1 LOCAL CHRONOLOGIES

LRA1: Extending local knowledge - Early prehistory

Analyses of all classes of data assigned to the earlier prehistoric periods - i.e., the early Mesolithic through to the early Bronze Age periods - recorded by the A30 Project will extend and broaden local understanding of the spatial extent, impact and character of human activities in the project area. This will provide contrast, comparison and compliment models of early land-use which have already been presented for the Hensbarrow area (see Herring and Smith, *ibid.*). Of particular significance will be the analysis of information recovered from sequences belonging to early Bronze Age ceremonial and funerary ritual (found primarily within the Gaverigan/Highgate area of the project) and their comparison with data from barrow sites of similar character and period excavated in the St. Austell area by Henrietta Quinnell in the 1970s (Miles 1975).

18.3.2 LRA2: Provide new local knowledge - 2nd Millennium BC

All classes of data recovered from well-preserved and stratified deposits dating to the 2nd Millennium BC discovered by the A30 Project, when analysed, will form a significant contribution to the character of settlement activities in a zone of lowland Cornwall with no previous record of sites of this period. Our local knowledge of the character of settlement in the Hensbarrow uplands is non-existent for this period.

18.3.3 LRA3: Enhance local knowledge - Later Prehistory and Roman periods

All classes of data recovered from well-preserved and stratified deposits dating to the latter part of the 1st Millennium BC recorded by the A30 Project when analysed will constitute

a detailed statement on the changing character of settlement and land-use in a zone of "Anciently Enclosed Land". Such analysis will contribute to the patchy theoretical models of land-use proposed for the Hensbarrow uplands (see Herring and Smith 1991, 24-25). In particular the changing history of occupation centred within the site of Penhale Round can be usefully compared with the settlement history of the round at Trethurgy which witnessed extensive excavations in the 1970s (Quinnell 1986 and forthcoming).

18.3.4 LRA4: Early Medieval Landscape

Whilst little new substantial information on the character of early medieval settlement and land-use was uncovered by the A30 Project, some commentary on ancient routeways and trackways in the project area can be produced and these can be linked to models of land-use on higher ground in the Hensbarrow area (see Herring and Smith, ibid.). Place-name analysis of early settlement in the adjacent Hensbarrow uplands has identified at least 47 potential early medieval settlements which contrasts with the very small number recorded in the project area (see section 18.6.8 and Herring and Smith 1991, 27). The implications of differential land-use linking with different kinds of landscape zones can be examined in the context of known local knowledge.

18.3.5 LRA5: Provide new information - History of landscape

One of the most significant contributions of data assigned to the historic periods collated during the A30 project will be the systematic analysis of the information gained from the investigations of historic hedge boundaries. Boundaries located in two landscape zones - Anciently Enclosed Land and Recently Enclosed Land - were examined. The results of those considered to be of medieval origin will be contrasted with those of post-medieval origin. In addition to providing a detailed commentary on the changing history of land-use during these historic periods, the results here will form a model which can be compared to models of changing land-use documented for the Hensbarrow area (see Herrring and Smith 1991).

18.3.6 LRA6: Provide new information - Industrial activities during historic periods

Whilst only limited industrial remains of the medieval and post-medieval periods were examined in detail by the A30 project, their study offers a useful contribution to the overall importance of this geographical area for the tin industry. Blackmore Stannary (embracing the adjacent Hensbarrow area) was Cornwall's dominant tin-working area in the early 14th century and beyond (Herring and Smith 1991, 35-38; and see Nowakowski 1997b). The results from the A30 project will contribute to the broader narrative of the importance of the tin industry for the area as a whole (see Nowakowski 1997b). This will be linked to the impact on landscape development and in particular on the evolution of the character of later medieval and post-medieval settlement in the project area.

18.4 Regional Research Priorities

Please note that the use of the term "regional" here refers to county-wide and south-western research frameworks.

There are a number of significant results from this project which feed directly into regional research priorities. Their value can be measured in a number of ways: in terms of their contributions to regional chronologies where well-documented cultural horizons and sequences can provide social, economic and environmental data for sites of different periods; advances in artefact studies; new information on settlement studies; advances in environmental studies and in landscape studies.

18.4.1 REGIONAL SEQUENCES– CULTURAL CHRONOLOGIES

RRP1: Providing new data - Early Neolithic studies

The well-preserved Neolithic data recovered from Penhale Round is an unique and exciting discovery of both regional and national significance. If confirmed by scientific dating to be of early Neolithic date, the "site" will be the first documented lowland "domestic" site of this period to be discovered in the county. To date, there is no comparative material in Cornwall. Its significance will not only be examined in the light of its contribution to the study of the character of Neolithic activities within the general locality where (perhaps more typical) "monumental" sites of this period have been recorded – that is, Devil's Coyt (Johnson 1979), Castilly Henge (Thomas 1963; Nowakowski 1997b), Helman Tor (Mercer 1986 and forthcoming) and (potentially) St. Stephen's Beacon (Herring and Smith 1991, 18) – but also in terms of its value to the study of early Neolithic communities in the south-western region.

18.4.2 RRP2: New information on activities in Early Bronze Age lowlands

Discoveries of lowland Early Bronze Age activities are rare in the county (see section 18.6.4). If pit [3189] discovered at Penhale Round is confirmed by scientific dating to belong to this period then its significance for an indication of early land-use for the region as a whole requires discussion and interpretation.

18.4.3 RRP3: New information on Early Bronze Age Funerary Tradition

Whilst funerary and ceremonial monuments of the Early Bronze Age period in the South-West have been perhaps the more "typical" of site-types to have been examined by excavation in the county, dates for this period are still relatively patchy (see Christie 1988, appendix 3). The sequences uncovered at Gaverigan Barrow, Highgate Ritual Enclosure and Highgate Pits will collectively form a valuable contribution to the discussion and examination of sites of this class and period. A good series of radiocarbon dates will mean that the structural sequences can be usefully compared and contrasted with the geographically closest contemporary sites in the Hensbarrow area (see above and Miles 1975) as well as with other contemporary sites in the region. The A30 sites have much to contribute to the ongoing examination of the phenomenon of a "ritual" barrow and will broaden the discussion of perceived regional cultural practice and tradition.

18.4.4 RRP4: New information on character of 2nd Millennium Settlement and land-use

Evidence for settlement activities of the 2nd Millennium BC found at Penhale Round and Penhale Moor will provide valuable new information on the varied character of Middle Bronze Age settlement in lowland Cornwall (see Nowakowski 1991; Christie 1986, 107). With a series of reliable scientific dates the results from the A30 Project will be fruitfully

compared with other excavated sites of a contemporary date in the county: Trevisker (ApSimon and Greenfield 1972), Gwithian (Thomas 1958; Megaw 1976), Trethellan Farm (Nowakowski 1991) and Callestick (Jones, forthcoming).

18.4.5 RRP5: New information on character of Later Prehistoric land-use

The study of later prehistoric settlement and contemporary field systems (Later Bronze Age to Iron Age) has been highlighted as a major regional research objective (see Quinnell 1986, 131). The discovery therefore of a relict landscape of this date found at Penhale Round has considerable county-wide significance. Little comparative data is currently available but the results here may be usefully compared to the settlement of Bodrifty in West Penwith (Dudley 1958) and perhaps, Trenowah near St. Austell (Johns pers. comm. and forthcoming).

18.4.6 RRP6: New information on the character of enclosed settlement during the later Iron Age and Romano-British periods

The excavation of Penhale Round has much to offer the study of enclosed settlement in the county during the later Iron Age and Romano-British periods. Not only were good stratigraphic sequences involving complex re-modelling and structural modifications present to be examined by excavation, these deposits also produced useful artefact assemblages and organic remains suitable for technological, economic and social analyses and for scientific dating. In addition, the associated field system presented the opportunity through detailed investigation to explore contemporary landscape development and issues of changing land-use. All these attributes have been highlighted as significant contributory assets in regional research priorities for this period (Quinnell 1986, 130-131). The results from Penhale Round will be compared with those from other excavated rounds such as Trethurgy (Quinnell 1986 and forthcoming), Reawla (Appleton-Fox 1992), Castle Gotha (Saunders and Harris 1982); Bodwen (Harris 1977), Trevisker (ApSimon and Greenfield 1972), Threemilestone (Schwieso 1976) and Trispen (Cole and Nowakowski forthcoming).

18.4.7 ADVANCES IN ARTEFACT STUDIES

The A30 project has provided new information for the study of ceramics for a variety of periods.

RRP7: New information on ceramic forms, fabrics and functions (where the potential for lipid analysis has been recognised) will be available from the study of the following material:

- **Early Neolithic ceramics** from Penhale Round, Penhale Moor and Halloon Farm.
- **Beaker material** from Penhale Round.
- **Early Bronze Age funerary vessels** from Little Gaverigan Barrow and Highgate Ritual Enclosure.
- **Middle Bronze Age assemblages** from Penhale Round and Penhale Moor will provide some discussion on the significance of anomalous fabrics.
- **Late Bronze Age/Early Iron Age ceramics** from Penhale Round and Penhale Moor will provide some commentary on the use of granitic fabrics.

- **Late Iron Age/Romano-British ceramics** from Penhale Round. Note: Fabric analysis of material of this period has been highlighted as an important area of study in Roman pottery research (see research objectives 3.8, 4.1 and 9.1 as discussed in Willis 1997).
- **Medieval ceramics** where the potential for lipid analysis has been recognised.

18.4.8 RRP8: **New information on site-formation processes and issues of cultural curation, disposal and refuse behaviour** will be available from material excavated the following sites:

- **Neolithic, Middle Bronze Age, late Iron Age and Romano-British ceramics, stonework and lithics** from Penhale Round.
- **Middle Bronze Age ceramics, stonework and metalwork** from Penhale Moor.

18.4.9 RRP9: **New information on the exploitation, use and function of worked stone** will be available for study from the following classes of material where geological and technological analyses will be of particular relevance:

- **Middle Bronze Age material** from Penhale Moor.
- **Iron Age material** from Penhale Round.
- **Roman material** from Penhale Round.

18.4.10 NEW INFORMATION ON PREHISTORIC SETTLEMENT STUDIES

The project has produced a substantive and significant body of qualitative data which will contribute new information of the character of settlement and land-use from the Early Neolithic through to the Roman periods.

RRP10: New information on the character of Early Neolithic lowland settlement

- **Structural, artefactual and economic data** from Penhale Round (site phase 2).

18.4.11 **RRP11: New information on the character of lowland settlement during 2nd Millennium BC**

- **Structural, artefactual and economic data** from Penhale Round (site phase 4).
- **Structural, artefactual and economic data** from Penhale Moor.

18.4.12 **RRP12: New information on the character of Early Iron Age lowland settlement**

- **Structural, artefactual and economic data** from Penhale Round (site phases 5 and 6).

18.4.13 **RRP13: New information on the character of later prehistoric and Roman enclosed settlement**

- **Structural, artefactual and economic data** from Penhale Round (site phase 7).

18.4.14 ADVANCES IN REGIONAL ENVIRONMENTAL STUDIES

RRP14 Advances in palynological and soil studies

Analysis of palynological sequences discovered at Gaverigan barrow, Halloon Farm and Highgate will form an important contribution to the study of early vegetational history for the prehistoric period in this area of the county. Analysis of the buried soil recovered from Little Gaverigan Barrow will compliment such studies.

18.4.15 RRP15: New Knowledge on Woodland management

Charcoal analysis of a number of samples recovered from well-sealed deposits dating from the early Neolithic to the late Roman periods will be a valuable contribution to the study of woodland management in a particular locality over an extended period of time. The results here will compliment and be compared with other results contributing to a reconstruction of the vegetational history of the area. Charcoal samples from Little Gaverigan Barrow, Highgate Ritual Enclosure, Highgate Ritual Pits, Penhale Round, Penhale Moor, Black Cross Oven and Pedna Carne will be examined.

18.4.16 RRP16: New knowledge on prehistoric economic studies – agricultural practice and land-use

Analyses of plant macrofossil remains recovered from Early Neolithic to later Roman contexts from a number of sites will contribute to a dynamic reconstruction of agricultural practice and land-use in the project area and this is turn will greatly enhance regional research into the history of economic and agricultural practice in the region. Data from the following site will be examined: Penhale Round, Penhale Moor, Little Gaverigan Barrow, Highgate Pits, Black Cross Oven and Pedna Carne.

18.4.17 ADVANCES IN LANDSCAPE STUDIES

RRP17: New information on later prehistoric field systems

Data recovered during investigations of early field systems at Penhale Round and Halloon Farm provides new insights into the character and development of early land-use in areas of Anciently Enclosed Land.

18.4.18 RRP18: New information on Early Prehistoric "ceremonial" landscapes

Data recovered during investigations of Little Gaverigan Barrow, Highgate Ritual Enclosure and Highgate Pits will provide a dynamic insight into the evolution and development of an early Bronze Age "ritual" landscape. In addition this will also contribute to a wider understanding of the history of land-use in the project area and provide a model for research in other parts of the county.

18.4.19 RRP19: New information on the character of field systems of Roman date

The investigation of the field system contemporary with occupation within Penhale Round will provide significant new information for the region as very few field systems of this period have been investigated by excavation in the county.

18.4.20 RRP20: Medieval Agricultural practice and rural settlement studies

The investigation of medieval cultivation ridges at Mayfield Farm provides a commentary on the survival of such sites in lowland Cornwall and can be linked to an overall study of the evolution of local settlement during the medieval period in the project area.

18.4.21 RRP21: History of landscape evolution and development during the medieval and post-medieval periods

The hedge boundary recording programme has provide a wide range of data to allow models of the evolution and development of the landscape in the project area to be produced. These results can be reviewed within a county-wide appraisal of ongoing research into the significance of recording such landscape features and will contribute to outline models produced as part of the **Cornwall Landscape Assessment** (see section 18.1.1 and *Cornwall Landscape Assessment*, Cornwall County Council, Countryside Commission and Cornwall Archaeological Unit 1996)

18.4.22 RRP22: New information on the history of the tin mining industry from the medieval to post-medieval periods.

The small-scale works undertaken at The Kelliers and Queen's Mine will not only contribute new information on the character of medieval and post-medieval industrial activities in the project area but also provide data relevant for a region research framework.

18.5 National Research Priorities

Results achieved by the A30 project are also relevant to a number of academic research objectives as defined in the English Heritage document "*Exploring Our Past 1998*" (English Heritage 1998) which, although still at draft stage, highlights research areas of national significance.

18.5.1 PROCESSES OF CHANGE PC4 Briton into Roman (c. 300 – AD 200).

The discovery of a relatively well-preserved multi-phased landscape within the vicinity of Penhale Round has implications for interpretations of land-use and history during the later prehistoric periods. This data can address issues of settlement continuity and change and provide insights into the structural character of change throughout the later Iron Age and Roman periods. Interpretation of the character of occupation within Penhale Round has particular relevance to a discussion of the reality of life within Roman Cornwall and the degree to which it was affected by processes of "Romanisation" documented in other parts of the country. This analysis can compare well with contemporary processes of change in other areas of the country. This objective ties in with new information for chronological periods (see 18.5.4 below).

- **Later Bronze Age and Iron Age landscapes** at Penhale Round (site phases 5 and 6) and Halloon Farm and Field System.
- **Later Iron Age and Roman-Cornish settlement and landscape** at Penhale Round (site phases 7.1 to 7.10).

18.5.2 Processes of Change: PC8 The Industrial Revolution (c. 1600 – 1850 AD).

Industrial remains of the post-medieval period in Cornwall are a significant component of the human landscape with the mining industry in particular playing a central role in moulding the character of medieval and post-medieval Cornish settlement. This importance had a direct influence on the pattern of settlement and farming. Data gained from the small-scale investigations of two mining sites will be intergrated into analysis of the human landscape dating to the post-medieval periods.

- **Data from:** Queen's Mine & The Kelliers
- **Impact on the landscape** – hedge boundaries, field systems and settlement patterns

18.5.3 CHRONOLOGICAL PERIODS - P6 Territories and tenure in the 4th and 3rd Millennium BC

The A30 project has produced a variety of results which reveal aspects of social and economic life during earlier prehistory. Analysis of the following classes of data will contribute new and qualitative information of national significance.

- **Neolithic data**: structural, cultural and economic at Penhale Round (site phase 2).
- **Beaker data**: structural, cultural and economic at Penhale Round (site phase 3).
- Lipid analysis – **Neolithic ceramics** from Penhale Round
- Lipid analysis – **Early Bronze Age ceramics** from Gaverigan
  Highgate Ritual Enclosure
- **Environmental data** from Gaverigan
  Highgate Ritual Enclosure
  Highgate Pits

18.5.4 P7 Late Bronze Age and Iron Age landscapes

New information of national significance will be available from the considered analysis of the character and dynamics of the changing prehistoric landscapes recorded at the following two sites:

- **Structural data** from Penhale Round field system (site phases 5 and 6).
  Halloon Farm field system

18.5.5 P8 Iron Age hillforts, enclosures and settlements

The cultural and economic information recovered during the A30 Project on the character of Iron Age settlement has particular importance given the general absence of detailed comprehensive investigations for sites of this period in the county. Radiocarbon dating will be of particular importance for data assigned to this period both within a county-wide and national framework.

- **Structural, cultural and economic data** from
  Penhale Round (site phases 7.1 to 7.10).
  ?Black Cross Oven
  ?Pedna Carne pit [128]
  Hedge boundaries and field systems

18.5.6 P9 Structured deposition: Ritual and Rubbish

The concept of "structured deposition" of material culture has been widely discussed within theoretical circles over the past few years and increasingly recognised within sets of data found during field investigations. These data sets reveal underlying attitudes towards refuse, ritual and the more general communicative role of material culture and insights into past mind-sets. A number of deposits discovered on several investigations on the A30 Project may be intrepreted as examples of this behavioural trait and thereby provide new data and insights for activities assigned to the Early Neolithic through to the Roman periods. Analysis of these data sets will contribute to the national discussion and recognition of this phenomenon.

- **Neolithic ceramics and lithics** from Penhale Round (site phase 2).
- **Early Bronze Age ceramics and stonework** from Gaverigan Barrow
- **Middle Bronze Age ceramics** from structure [358] at Penhale Round (site phase 4)
- **Middle Bronze Age ceramics and metalwork** from Penhale Moor
- **Roman ceramics** at Penhale Round (site phases 7.6 to 7.10).

18.5.7 THEMES -T3 RURAL SETTLEMENT

Analysis of data assigned to the later Iron Age and Roman periods discovered at Penhale Round will provide a detailed veiw of the changing economic and social character of the nature of rural settlement and this links in with the aims of objective PC4 (see above).

- **Structural and stratigraphic data , artefacts, ecofacts and economic data** from Penhale Round (site phases 7.1 to 7.10).

18.5.8 T4 Field Systems

One of the most significant aspects of work on the A30 project has been the opportunity to examine field systems contemporary with known later prehistoric settlement. The data from the following two sites on the A30 project will contribute valuable information to an area of study still very much in early phases of research in the country. This will contibute to the more general discussion on the history of land-use and the evolution of rrural settlement.

- **Late Bronze Age/Iron Age field system** at Penhale Round (site phases 5 and 6).
- **Late Iron Age/Romano-British field system** at Penhale Round (site phases 7.1 to 7.10).

18.5.9 T6 Industrial Archaeology

Analysis of data from the industrial sites listed below link in with the aims of objective PC8 (see above).

- **Structural and stratigraphic data** from:
  Queens Mine
  The Kelliers
- Impact of industry on settlement patterns and land-use.

18.5.10 T7 Patterns of craftsmanship and industry (including agriculture).

Analysis of stone artefacts found in phases dating from early prehistory through to the Roman period at the following two sites will contribute much to a discussion on the sources, use and exploitation of stone in the county and this can be discussed against a background of national research.

- **Technological analysis of stonework** from:
  Penhale Round (site phases 2, 4, 5, 6, 7.5, 7.8 and 7.9).
  Penhale Moor

- **Charcoal analysis** of samples dating from the Early Neolithic to the late Roman periods giving insights into woodland management from sites:
  Penhale Round
  Penhale Moor
  Little Gaverigan Barrow
  Black Cross Oven
  Highgate Pits

Collectively the results of this work will provide a useful model which can be contrasted with other similar studies both regionally and nationally.

18.5.11 T8 Human health, diet and economy

The A30 Project has produced a useful body of ceramic data recovered from well-sealed contexts of different archaeological periods which are amenable to new techniques such as lipid analysis which can provide real insights into aspects of human diet and economy. Such studies are of particular relevance on areas such as the south-west where the direct evidence for animal husbandry is often absent due to the generally acidic conditions of south-western soils.

- **Lipid analysis of ceramics** dating to the Neolithic, Early Bronze Age, Middle Bronze Age, late Iron Age/Roman and Early medieval periods – various sites.

18.5.12 T9 Human Ecosystems

The A30 project has produced a substantive and qualitative body of environmental data which will reveal much about the local environment of the project area from the Neolithic right through to the Roman periods. Collectively the analysis of this data has much to offer for south-western research in human ecosystems but this will also be significant when set in and examined within a national framework of research.

- **Palynological analysis** from:
  Penhale Round (hedge 2 buried soil)
  Little Gaverigan Barrow
  Highgate Ritual Enclosure
  Halloon
- **Insect analysis** from Little Gaverigan Barrow
- **Geoarchaeological analysis** from:
  Buried soil at Little Gaverigan Barrow

18.5.13 LANDSCAPES - L1 Cognitive landscapes

Whilst extensive landscape surveys in the south-west have identified the phenomenon of the early prehistoric "ritual" landscape the opportunities to examine these "sites" and their landscape setting by excavation have not arisen which makes collective analysis of the results from the following body of data highly significant. These results will be compared with other documented "ritual landscapes" in the south-west and contribute to theoretical discussions of "cognitive landscapes" (*cf.* English Heritage 1997).

- **Relict ceremonial Early Bronze Age landscape:**
  Little Gaverigan Barrow
  Highgate Ritual Enclosure
  Highgate Pits

18.5.14 L3 REGIONAL CHRONOLOGIES

Data from the following sites and periods will contribute significantly to regional and national chronologies. The application of scientific dating techniques will help refine both regional and national chronologies.

• **Mesolithic material:**	Penhale Moor Little Gaverigan Barrow
• **Early Neolithic material:**	Penhale Round site phase 2
• **Beaker material:**	Penhale Round site phase 3
• **Early Bronze Age material:**	Little Gaverigan Barrow Highgate Ritual Enclosure Highgate Pits
• **Middle Bronze Age material:**	Penhale Moor Penhale Round site phase 4 WB94 hollow
• **Late Bronze Age/Iron Age material:**	Penhale Round site phases 5 and 6 and structure [5517] Halloon Farm field system
• **Late Iron Age/Roman material:**	Penhale Round site phases 7.1 to 7.10 ?Black Cross Oven ?Pedna Carne Hedge boundaries and field systems
• **Early medieval landscape:**	Penhale Round site phases 8 & 9 Deep lane
• **Medieval landscape:**	Hedge boundaries and field systems
• **Post Medieval landscape:**	Hedge boundaries and field systems

18.6 Specific Aims

Work on the A30 project produced a wide range of data all of which contribute to the original vision of the project as a landscape-based study. The data has also however raised additional lines of research - the specifics of which are discussed in the main text of this report in sections which outline data potential. These further areas of study contribute to

the overall conceptual framework of the project by adding both general and specific information. Their contributions are summarised below.

18.6.1 Mesolithic landscape c.9500 - 9000 BP by Alison Roberts

The four small groups of Mesolithic artefacts represent pieces diagnostic of both the Early and Later phases of the period. The majority of the pieces appear to be associated with activity during the first part of the Later Mesolithic, a period which saw a considerable expansion of hunter-gatherer activity throughout the south-west peninsula. The variation within the microlith assemblage and the distribution of these finds seem to indicate that the general area around Indian Queens was utilised on at least a sporadic basis for hunting, and hunting implement re-tooling throughout the period. It is probable that the attraction of the area for these hunter-gatherer groups was in the strategic location close to both the river Fal and the Hensbarrow uplands.

No artefact types were recovered which are diagnostic of the final part of the Later Mesolithic (7000 - 5500 BP); e.g., microscalene triangles or rods. This factor might be related to a decrease in the utility of the locale for hunting due to the dense forestation of such inland areas during the climatic optimum, but the apparent absence could be deceptive and may be overturned by future work.

The find of a large scalene triangle during the 1994 watching brief at Penhale Moor is of considerable interest in considering the organisation of human activity in the south-west during the early Mesolithic period. Prior to the work at Indian Queens all of the known findspots of this microlith type were from the two granitic upland areas in the central and eastern part of the county: Hensbarrow and Bodmin Moor respectively. As such, an explanation of the distribution based on a function related to topography could have been supported, although such forms were not found on the other Cornish uplands. Whereas the recovery of such a microlith type from an inland lowland situation such as this does not eliminate this possibility, it does suggest that an interpretation concerned with issues of style, territoriality and hunter-gatherer mobility within the Early Mesolithic landscape is likely.

In general, the Mesolithic artefacts recovered during the A30 project were from residual contexts and seem to represent a background of Mesolithic activity throughout the whole area. Inland lowland sites of this period are exceedingly difficult to locate due to both the original nature of the sites, and the development of the modern landscape. Although an *in situ* Mesolithic site was not discovered during the work at Indian Queens, the physical evidence of human activity in the area during this period is a major advance in knowledge concerning the use of the landscape during the early Postglacial period.

Summary aims

- Some commentary on the character of human activities during the Mesolithic period in the study area can be produced (see above) which adds depth to the narrative of land-use in the project area. The discussion will be set within a regional framework of knowledge and some comments on the procurement of

materials used for stone tool manufacture will be made (Aims: LRA1; L3 - Task 42).

- A map showing other findspots would be useful to illustrate a discussion of current knowledge of human activity in the south-west during the Mesolithic periods (Aims: LRA1; Task 64).

18.6.2 Neolithic landscape c. 4th Millennium BC by Jacky Nowakowski

A series of reliable accelerator dates obtained from contexts provisionally identified as dating to the Neolithic period discovered at Penhale Round (see section 5.2.2) if confirmed, will be extremely significant. The preservation of structural, artefactual and environmental data indicative of "domestic" activities found at Penhale Round remains, to date, unique for a lowland context in the south-west. Prior to their discovery no known sites of Neolithic date - settlement or ceremonial - have been recorded within the Indian Queens and Fraddon area, although some Neolithic presence within the broader surrounding area is suggested for this period by the chambered tomb known as "The Devil's Coyt" at Quoit (c. 1 kilometre to the north-east of the project area, see Johnson 1979), and the impressive earthwork of Castilly Henge which lies over 10 kilometres away on Innis Downs (Nowakowski 1997b). Whilst the case for Neolithic "settlement" at Penhale Round remains to be confirmed through scientific dating, these discoveries form a significant contribution to a regional research framework focused on the study of early prehistoric activities in lowland landscapes.

Summary aims

- A discussion of the character and significance of Neolithic activity in the project area will take place which draws on the detailed contextual analysis of structural, artefactual and ecofactual data recovered from deposits excavated at Penhale Round and the more ephemeral material found at Halloon Farm. This data will be examined within a local and regional research framework, as well as discussed in terms of its national significance (Aims: LRA1; RRP1; P6; L3 - Task 44).
- Full study of the archaeobotanical data recovered from these early prehistoric contexts is of particular importance given its rarity in the archaeological record for this period (Aims: RRP16; Task 37).
- Full study of the "closed group" of Neolithic ceramics recovered from pit [254] is recommended alongside detailed petrological work in order to further understanding of local and regional patterns of exchange. Analysis of associated organic residues will add another significant and more detailed dimension to the study of material culture for this period (Aims: RRP7; P9 - Tasks 22 & 24).
- The "closed group" of flintwork recovered from pit [254] requires full analysis as it forms a coherent unit of study which will contribute to the overall study of material culture for this period (see above and section 5.6.8, Aims: P9 - Taks 29).

- Contextual analysis of the range of evidence associated with Neolithic "structures" at Penhale Round will form a major part of the interpretation of the site and contribute to an understanding of on-site behaviour and should form the basis for an explanation of the phenomenon of "structured deposition" (cf. Richards and Thomas 1984) (Aims: P9 - Tasks 22, 24 & 44).
- Accelerator dates obtained from Neolithic deposits found at Penhale Round will make a significant contribution to the broader discussion of the character of earlier Neolithic activities in lowland landscapes on both a regional and national scale of research (see Darvill in Darvill and Thomas 1996; Topping 1997) (Aims: RRP1; P6; L3 - Tasks 5 & 47).
- A small collection of probable Neolithic sherds were also found at Halloon Farm and Penhale Moor. These, together with flint diagnostic of this period, were recovered from residual contexts and provide some background indication of a perhaps more extensive spread of occupation or even "ritual" activities dating to this period within the project area. Their study will form a contribution to the writing of a general commentary on the spatial extent of activities for this period. Such ephemeral evidence recovered from locations with archaeological and documentary evidence for long histories of occupation and settlement highlights the importance of taking appropriate opportunities to broaden the scope of fieldwork in lowland contexts (Aims: LRA1 - tasks 29, 44 & 47).

18.6.3 Early Bronze Age Ceremonial Landscape by Jacky Nowakowski

Prior to this detailed work little was known of sites of the Early Bronze Age period in the project area. The discovery of a variety of site types for this period in the vicinity of Little Gaverigan Farm has helped fill this gap in our knowledge. The close proximity of Little Gaverigan Barrow to Highgate Ritual Enclosure and the possible prehistoric pit alignment also found at Highgate represents an early ceremonial landscape in an area of ***recently enclosed land*** (REL) overlooking Goss Moor. The good palaeo-environmental data from all of these sites indicate that these sites existed within an open heathland landscape with nearby areas of grassland and rough pasture, but the data also provided hints of arable cultivation within the general locality. The discovery of one pollen grain of rye from Highgate Ritual Enclosure is an early record for this cereal (although perhaps only as a weed) in the extreme south west of England (see section 2.3.3).

This significant landscape setting appears to have been constructed and deliberately reserved for the purposes of funeral ceremony, display and ritual. The three sites (lucky survivals of many) must therefore be collectively appraised as their function and meanings are likely to be interrelated. They present an elaborate picture of early prehistoric ritual: a scenario which one suspects maybe fairly common for sites of this period in the south-west. During the 1970s a number of similarly dated sites were excavated by Henrietta Quinnell in the adjacent china clay area (Miles 1975). Her work demonstrated that much of the higher ground in this zone would have been used for rough grazing and the positioning of ceremonial sites rather than for settlements and their fields. The ritual landscape centred around Little Gaverigan Barrow lies on the very north-western edge of this upland area. As has already been discussed, the identification of ritual landscapes such

as this have been documented in areas of Bodmin Moor and West Penwith (*cf.* Johnson and Rose 1994) and although many of these have been mapped by archaeological survey, very few have been closely examined through excavation. The analysis of these three sites which have produced good qualitative data will make an important contribution to the study of early prehistoric ritual landscapes in the county.

The survival of Little Gaverigan Barrow as an earthwork in a landscape which had been enclosed in recent (late post-medieval) times (aka REL - ecently enclosed land) permitted its discovery during the reconnaissance survey in 1991 (Rose, Herring and Nowakowski 1992). There was however, no surface indication of Highgate Ritual Enclosure or the pit alignment. The overall good survival of archaeological layers and deposits at all three sites belies the belief that post-medieval and modern agricultural practices will completely obliterate all traces of such ancient landscapes. The opportunity to examine the landscape settings of individual sites has highlighted the importance of a contextual approach to such work and to subsequent interpretations of sites of this character and period.

Summary aims

- The structured sequences and perceived chronological phases recorded at the Early Bronze Age site of Little Gaverigan Barrow will be presented and compared to broadly contemporary sequences such as those recorded at Highgate Ritual Enclosure as well as those recovered from other barrow excavations in the south-west. It is anticipated that such a discussion will form a significant contribution to the study and interpretation of a site type increasingly recognised as a "ritual barrow" (see Miles 1975 and Nowakowski 1996). This discussion will embrace both a regional and national review of this phenomenon (Aims: LRA1; RRP3; L1 - tasks 46 & 47).
- Reconstruction and consolidation of the ceramic and contemporary metalwork artefacts excavated at Little Gaverigan Barrow and Highgate Ritual Enclosure have already taken place in order to facilitate further analysis. Further technological and detailed scientific analyses of these items are proposed. It is anticipated that these areas of study will contribute to a richer understanding of the functions and meanings of the material culture of the Early Bronze Age period and examine the issues of local manufacture, movement and exchange (Aims: LRA1; RRP3; RRP7; P9 - tasks 22 & 26).
- Dates for the Early Bronze Age period in the south-west are still relatively patchy (see Christie 1988, appendix 3). It is therefore important to obtain a good series of dates from Little Gaverigan Barrow, Highgate Ritual Enclosure and Highgate Ritual Pits so that their chronological positions can be confirmed. The significance of these results will be discussed and appraised as part of the context of regional and national research into relict ceremonial landscapes (Aims: LRA1; RRP3; L1; L3 - tasks 5).
- As part of the overall interpretation of the Early Bronze Age sites recorded on this project, contextual analysis of all classes of data will provide insights into on-site behaviour and contribute to a discussion of the relationship between monuments and material culture. It is anticipated that insights into the

changing dynamics of such monuments will be observed (Aims: RRP3; RRP18 - task 46).

- The good quality environmental data excavated at Little Gaverigan Barrow and Highgate Ritual Enclosure will provide extremely useful profiles for a detailed reconstruction of the local vegetational history which can be discussed in relation to existing local and regional knowledge for this period and will provide a useful contribution to and contrast with the corpus of data from sites of other periods excavated elsewhere in the project area (Aims: RRP14; P6 - task 35).
- A significant aspect of the work which took place at Little Gaverigan Barrow, Highgate Ritual Enclosure and Highgate Ritual Pits has been the opportunity to appraise in some detail the landscape setting for these sites. If, as anticipated, scientific dating confirms their contemporaneity, then a discussion of the spatial dynamics of this ceremonial landscape will form a significant part of an overall discussion of evolving and changing land-use in this part of the project area. These results will be compared with other documented "ritual landscapes" in the south-west and contribute to theoretical discussions of "cognitive landscapes" (*cf.* English Heritage 1997). In addition, this discussion will be reviewed against the background of later land-usage gained from the study of the development of enclosure and field systems from information obtained through the hedge boundary recording programme (Aims: RRP18; L1 - task 46).

18.6.4 Early Bronze Age Lowland Landscape c. 1800 BC by Jacky Nowakowski

Contemporary settlements for this period have always been difficult to detect in Cornwall and this is very much the case for the Indian Queens area. Although we do not know where the people who constructed and used these sites lived, the general scatter of flint artefacts found during the watching brief programme within the road corridor gives a general indication of contemporary prehistoric activities within low-lying land. Whilst the exploitation of local clays used for the ceramics found at Little Gaverigan (see section 1.2.8) would suggest that settlement was not far away. A few Beaker sherds and flint artefacts diagnostic of the Early Bronze Age period were recovered from secondary deposits at Penhale Round, topsoil at Mayfield Farm and fragments of whetstones dating to this period were found at Penhale Moor and Halloon Farm. Whilst these early finds were found in residual contexts and were clearly not associated with occupation deposits, their discoveries at these sites may well be an indication of favoured locations for early settlement. Their study will contribute to a general commentary of the spatial extent of early prehistoric activities within the study area. Of all of these sites, an early pit found at Penhale Round (see section 5.2.3) may be an indicator of activities contemporary with the ceremonial landscape at Gaverigan as may the amber bead found at Penhale Round. However the exact character of such early activities - if confirmed to be the case by radiocarbon dating - on lower land is likely to remain unclear.

Summary aims

- Little substantial evidence was found for the character of early settlement contemporary with the funerary and ceremonial sites of Early Bronze Age date. However some general discussion about the likely spatial extent of contemporary human activities is possible, given the general scatter of finds from other sites in the project area. In particular, the date of pit [3189] discovered at Penhale Round needs clarification and if found to be early prehistoric will have relevance concerning locations favoured for early settlement. A scientific date for this feature is required (see section 5.8.2). The survival of any such early features within a lowland context has significance for an understanding of early land-use and highlights the importance of taking an equivalent landscape-approach for future projects (Aims: LRA1; RRP2 - tasks 5 & 45).
- Full analysis of archaeobotanical data recovered from the pit (i.e., pit [3189]) is recommended as material of this date is rare in the south-west. This information will, in addition, give very useful insights into patterns of changing land-use within this part of the project area (aims: RRP16 - Tasks 37).

18.6.5 Middle Bronze Age Settlement - Farming Landscapes c 1000 BC by Jacky Nowakowski

Another exciting and significant range of evidence was that uncovered during our excavations at Penhale Round, Penhale Moor and also possibly at Halloon Farm. At all three sites the remains of field boundaries were discovered, while at the first two, these were found together with buildings dating to the Middle Bronze Age period. The early buildings, enclosures and related features at Penhale Round and Penhale Moor form part of a contemporary (landscape) setting and have provided us with a remarkable detailed insight into the character of the agrarian landscape over 2,500 years ago.

At both sites the evidence varied in character. The oval building excavated at Penhale Round is an unusual vernacular form which appears to have been used in a specific way and was associated with a circular enclosure. Of interest was the surprising lack of cereal seeds in the material recovered from the structure in contrast to similar broadly contemporary contexts excavated at the Bronze Age settlement of Trethellan Farm, Newquay (see section 5.7 and Straker in Nowakowski 1991). Whether this structure is a relict of a pastoral landscape has yet to be ascertained. Also in contrast are the three buildings of seemingly similar date excavated at Penhale Moor. (The third being structure [2541] which was only partially recorded during the watching brief exercise - see section 6.1.5). The two neighbouring structures found during the excavation in 1994 represented different architectural forms and appeared to form part of a small homestead within a landscape characterised by a dispersed settlement pattern. All these Bronze Age structures existed within a similar topographical setting however and their differences hint at a diversity of character and perhaps function - all of which constitutes new evidence for this period. In addition, the similar fashion in which the Penhale Round and Penhale Moor Bronze Age structures were abandoned is of considerable interest in the light of comparative behaviour recorded at Trethellan Farm and a consideration of this will form a substantial part of the collective review of the results of this data.

At Halloon Farm relict traces of a prehistoric field system but no associated structures were found. Although it will be difficult to date the Halloon field system securely, the arrangement and layout of the ditches is suggestive of a comparatively early date.

Little extensive knowledge exists for the character of settlement during the Middle Bronze Age period in the South-West, and indeed for Southern England as whole. Previous archaeological work for this period in Cornwall has been limited to the examination of a few individual settlements found more by accident than design: Trevisker in St. Eval (ApSimon and Greenfield 1972), Gwithian near Hayle (Megaw 1976) and Trethellan Farm near Newquay (Nowakowski 1991). This new range of evidence uncovered at Indian Queens will therefore not only make a significant contribution to our understanding of Cornish Prehistory but also to Bronze Age Studies nationally.

Again the remarkable survival of archaeological features at all three sites should alert prehistorians in their search for the elusive settlement patterns in the Cornish lowlands to the likelihood that, despite later historic landscape development, sites of this period may survive well and in large numbers. In all three cases, geophysical survey has proved its value as a detection tool and it is tempting when reviewing the results of this project to advocate its use for all similar archaeological schemes. Geophysical survey is a cost-effective means of evaluating the archaeological resource and should help the landscape archaeologist make informed judgements about the potential survival of sub-surface archaeological remains. This is particularly important in relation to the assessment of any major impact of construction projects such as road schemes. Of course, geophysical survey may not work well on all geology and the case for small-scale trial trenching or test-pits remains an important alternative or complementary option. For this particular project we can argue, with the benefit of hindsight, that this technique should have been employed more extensively.

Summary aims

- The marvellous preservation of structural, artefactual and economic deposits at Penhale Round and Penhale Moor relating to domestic settlement during the Middle and (perhaps Late) Bronze Age periods will enable full contextual analyses to take place. This study will form a significant contribution to the study of lowland settlement for this period (Aims: LRA2; RRP4; RRP11; L3 - tasks 48 & 49).
- A series of good scientific dates obtained from the Bronze Age structures excavated at Penhale Round and Penhale Moor will be valuable not only for dating their ceramic and metalwork assemblages, but also for their relevance to the discussion of local land-use and human settlement within the project area. In addition they will make an important contribution to a regional appraisal of settlement for this period of prehistory. Detailed dating strategies for both sites have been presented in sections 5.8.3 and 6.7 (aims RRP4; L3 - Task 5).
- The significance of the ceramic assemblage for the study of domestic Bronze Age pottery from Penhale Moor (in particular) has been emphasised in section 6.5.2. A discussion of the importance of this pottery will be enhanced by a full

petrological study and complemented by the study of organic residue analysis. This comprehensive study will be compared with other contemporary ceramic groups studied in the region (Aims: RRP7; P9 - tasks 18, 21 & 24).

- The "closed groups" of MBA ceramics excavated from structure [358] at Penhale Round and from those neighbouring structures ([1013] and [1018]) at Penhale Moor will be studied for their contribution to our knowledge of south-western Trevisker wares. In addition, work on sherd size, fragmentation of vessels and post-depositional processes should enable a discussion of on-site formation processes. It is anticipated that these studies will contribute to the examination of the abandonment phenomena increasingly recognised as a cultural trait at sites of this period (see below (Aims: RRP8; RRP11; P9 - Tasks 24 & 49).)

- A small group of worked stone recovered from structure [358] at Penhale Round and [1018] and [1013] at Penhale Moor has been selected for technological analysis in order to determine whether they were utilised in craft and/or industrial activities such as metalworking (see section 5.6.9 and 6.5.8). Such analysis is likely to clarify whether the economies of both settlements were to some degree specialised (Aims: T7 - task 19).

- Geological sourcing of a selection of worked stone objects recovered from Bronze Age contexts at Penhale Round and Penhale Moor has been recommended. Identifications of the resources from which this stonework was made will throw some light on the movement of resources during this period (Aims: RRP9; T7 - Tasks 20 & 25).

- Spatial analysis of lithics excavated from the MBA deposits at Penhale Moor should assist in a contextual analysis of these structures. The assemblage may be compared with a larger contemporary group excavated at Penhale Round. (Aims: RRP8; RRP11 - Task 29).

- The small collection of flintwork of probable Bronze Age date recovered from Mayfield Farm will be compared with the larger collections from Penhale Round and Penhale Moor and a small contemporary assemblage found at Trethellan Farm, Newquay (Nowakowski 1991) (Aims: LRA2; RRP8; RRP11 - Task 29).

- The discovery of metal objects in well-sealed deposits at Penhale Moor is significant due to the general rarity of such finds in the south-west. The material will be studied and compared with those items found on sites of a broadly contemporary date. It is anticipated that their main contribution to the study of BA material culture will be the provision of reliable scientific dates as well as an interpretative discussion of the contexts in which they were discarded and survived. (Aims: RRP8; RRP11; P9 - tasks 19 & 26).

- The assessment of archaeobotanical data recovered from MBA contexts at Penhale Moor and Penhale Round has drawn attention to marked differences in their economic bases when compared to contemporary sites such as Trethellan Farm (Nowakowski 1991 and see section 6.6.1). Full analysis of charred plant macrofossils and charcoal is recommended to interpret the

ecology of these sites during the MBA period. It is anticipated that such study will enhance our (still limited) knowledge of farming practices on lowland sites of this period (RRP16 - task 37).

- The overall character of Middle (and Late?) BA lowland occupation discovered at Penhale Round and Penhale Moor contrasts with that of broadly contemporary sites such as Trevisker (ApSimon and Greenfield 1972) and Trethellan Farm (Nowakowski 1991). These differences are expressed by the use of a variety of building styles and settlement layout as well as apparently different economic bases. Whilst similar material culture was found at these other sites, the stonework found at Penhale Moor (in particular) may indicate a specialised settlement. The status of these sites may well be quite unusual, and as such a detailed discussion of all sets of data from these sites will make an important contribution to the perceived variety of settlement types in lowland settings for this period in prehistory (see Nowakowski 1991, 188) (Aims: RRP4; RRP11- Tasks 48 & 49).

- The excellent preservation of a range of archaeological data found within the Bronze Age structures at Penhale Round and Penhale Moor owes much to the manner in which these features were abandoned. Similar systematic abandonment processes have been recorded on a number of contemporary sites such as Trethellan Farm (Nowakowski 1991) and Callestick (Jones, forthcoming) and the evidence from the A30 project will be discussed in terms of its significance for our understanding of cultural trends and processes for this period of prehistory (Aims: RRP8 - Tasks 48 & 49).

- A descriptive account of the Halloon field system will be produced. This discussion will focus on its survival as a relict field system of possible early prehistoric date located within a zone of historic enclosure and will provide comparisons and contrasts to enclosure ditches excavated at Penhale Round and Penhale Moor (Aims: RRP17; P7 - tasks 50 & 51).

- The prehistoric settlement discovered at Penhale Moor formed one component of a general landscape which included the later site of Penhale Round (which lies just 500 metres to the north). This general location has clearly been favoured for settlement since early prehistory and the survival of early settlement belies the belief that many such sites in the lowlands have been completely obliterated by the plough. The potential survival of early settlement within landscapes transformed in later prehistory may clearly be far more extensive than has been previously thought. Penhale Moor (and indeed the Bronze Age remains at Penhale Round) were discovered by geophysics as was the later enclosed site and its surrounding multi-phased relict field system. The value of geophysical survey in lowland Cornwall has thus been more than adequately emphasised by the A30 project as a whole and some discussion of its value will be made to highlight the need for more clearly defined reconnaissance strategies (task 60).

18.6.6 Later Prehistoric Field Systems - ?Late Bronze Age to Iron Age landscapes c. 800 - 100 BC by Jacky Nowakowski

Of the two prehistoric field systems targeted for investigation in the project design (i.e., Penhale Round PRN: 21088 and Halloon PRN: 21097 - see Rose, Herring and Nowakowski 1992, 4.2), that excavated at Penhale Round has produced extremely significant results. The Penhale excavation not only demonstrated the chronological depth of enclosure within the vicinity of the round, thereby confirming the results of the geophysical surveys, but also clarified a sequence of development which indicates changing land-use, in doing so highlighting issues of change and continuity. In this respect one of the most significant discoveries were ditches associated with the Middle Bronze Age phase of settlement (see above 18.6.5.). But a further important discovery was the identification of phases of enclosure which pre-dated the construction of the round (i.e., phases 5 and 6, see sections 5.2.5 and 5.5.7). The field system, if confirmed as being late Bronze Age to Iron Age in date, has few obvious parallels in the south-west and for the moment, with structure [5517] (assigned to phase 6), provides a unique picture of Iron Age settlement within lowland Cornwall. The recent investigation of a late prehistoric field system at Trenowah, St. Austell once analysed may usefully compare (Charles Johns, *pers. comm*). As stressed in section 5.5.7, radiocarbon dating will be crucial to verify the date of activity centred on this system as further study of its character and form has much to offer research on the study of settlement during this period.

In contrast, the relict field system investigated at Halloon Farm revealed a frustrating lack of comparative data. Whilst no direct dating material was recovered here a prehistoric date seems most appropriate. It is doubtful whether the system can be confidently assigned to a distinct chronological phase of land-use.

Summary aims

- Remnant traces of enclosure for this phase of activity at Penhale Round make a significant contribution to an understanding the evolution of the local landscape. The system is also one of very few of this period to have been investigated by excavation. A descriptive and discursive synthetic account of the early phases of enclosure identified at Penhale Round will be produced. This will include an appraisal of its contribution to the study of the processes of change within the particular landscape zone classified as **Anciently Enclosed Land** (AEL) in this part of the project area (for a definition of this landscape category see above, section 18.1.1). In addition the contribution of these results to the study of later prehistoric settlement activity will be discussed within a regional framework of research. (Aims: RRP5; RRP12; RRP17; P7; T4 - tasks 50 & 51).
- Some commentary of the character and the layout of early enclosure at Penhale Round will be made alongside a discussion which highlights the implications of such boundary maintenance - very much a marked trait within this system (see section 5.5.7). This will be of relevance to the study of local land use and have some implications for the nature of land use for this period (Aims: PC4; P7 - task 51).

- Some comment will also be made about continuity of activity within the area during prehistory. At the present stage of analysis it appears that there may be a gap in human activity here for at least 600 years (see above) (Aims: PC4 - task 51).

- An Early Iron Age date for pit [3106] is likely to provide an important indication of the chronological depth of landuse within the landscape of the later prehistoric round at Penhale and will contribute to a discussion of continuity and change. Such information will also be useful in dating the appearance of the use of gabbro variants in pottery manufacture (see sections 5.6.3 and 5.6.4). A dating strategy has been presented in section 5.8.4. (Aims: RRP7; RRP12 - Tasks 5 and 24).

- A detailed discussion and synthetic account of structure [5517] will be produced. The vernacular form of the building is unparalleled in the south-west and its study will contribute much to an understanding of the character of settlement in lowland landscapes during the later prehistoric period. It will be compared to the small number of gullied pre-Roman structures which have examined in the south-west such as those at Threemilestone near Truro (Schwieso 1976) and Reawla near Gwinear (Appleton-Fox 1992) (Aims: LRA3; RRP12; L3 - tasks 50 & 51).

- The small ceramic assemblage found at Penhale Round and identified as being diagnostic of the later prehistoric period should be fully studied since material for the Late Bronze Age/Early Iron Age is scarce in the south-west. Petrological study is also recommended and the implications are discussed in section 5.5.6 (Aims: RRP7 - tasks 18 & 24).

- Whilst plant macrofossils were generally absent in most linear features assigned to phases 5 and 6 (i.e., the pre-round phase), the assessment has identified archaeobotanical data from structural features such as [5517] and hearth pit [3305] whose full analysis will not only help reconstruct economic practices for this period, but also provide useful comparisons with similar material recovered from other phases of activity on site and help form a picture of changing land-use within this zone of the project area (Aims: RRP16 - task 37).

18.6.7 Late Iron Age and Roman Settlement in the project area - c.100 BC to 400 AD by Jacky Nowakowski

The main evidence for later prehistoric settlement within the project area is Penhale Round. Enclosed settlements are characteristic of rural Cornwall over 1500 years ago. Although a number of rounds have been examined by excavation in Cornwall, little previous work has been directed at investigating the landscape settings of such sites. The work at Penhale has therefore provided a first opportunity to look beyond the confines of such sites and has contributed insights into the study of this class of monument.

Excavation of a sample (17.5%) of this site revealed a complex site history and provided a rather unique insight into the processes of change within rural settlement during the later Iron Age and Roman periods. The sequential transformation of a univallate enclosed settlement into a multi-ditched one has been documented through a process of structural

changes which, to some degree, can be chronologically supported by associated material culture. The importance of corroborating the major phases of this process with a series of radiocarbon dates has been highlighted in sections 5.5.8 and 5.6.4.

No other sites of this period were found within the project area (except perhaps for the enigmatic oven site found at Black Cross). Radiocarbon dating can only clarify the antiquity of this feature so at this present stage of analysis, the Black Cross Oven has been considered of being Roman in date. Of interest as well, is the solitary pit [128] found at Pedna Carne during the watching brief programme (see section 16.4.4). The pit produced no finds but contained a very rich charred plant assemblage similar to that found in the Black Cross Oven. A radiocarbon date from pit [128] would be very useful if found to be of Roman date.

Summary aims

- A full descriptive and interpretative account of the excavations at Penhale Round embracing the whole range of structural, artefactual and environmental data (all recovered from well-sealed archaeological contexts) will help to build a dynamic picture of the changing history of the settlement over a period of time. These results will have much to contribute to the study of economy, social character and cultural change of settlements during the Roman period in the county (Aims: LRA3; RRP6; RRP13; P8 & L3 - task 52).
- A series of good radiocarbon dates are required to corroborate the structural phases recorded stratigraphically and although the ceramic assemblage contains diagnostic and therefore datable forms, many were recovered from secondary deposits and can not be used for an understanding of the chronology of the site with absolute confidence. A detailed dating strategy for the Iron Age and Roman phases at Penhale Round has been set out in section 5.8.6. Radiocarbon dates for this period are still required in the south-west (see Quinnell 1986) (Aim: L3 - task 5).
- A discussion of the character, layout and evolution of the field system contemporary with the round will be produced. Very few Roman period field systems have been investigated by excavation and so this study is of particular relevance. The importance of examining the contemporary surroundings of a settlement of this class and period has been more than adequately emphasised in sections 5.5.1 and 5.5.8 (Aims: RRP19; PC4; T4 - task 52).
- A full descriptive account of the oval structure ([2045/5045]) found just inside the entranceway at Penhale Round will contribute further to the study of Roman vernacular buildings. In form and size this may be compared to similar excavated buildings of this period such as those at Trethurgy (Miles and Miles 1973 and Quinnell, forthcoming), Castle Gotha (Saunders and Harris 1982, 123-124) and Grambla (Saunders 1972) (Aim: RRP13 - task 52).
- Full study of a selection of the ceramic assemblage including petrological study and organic residue analysis will provide a useful comparative study for assemblages recovered from contemporary sites. This study will focus on late

Iron Age and Roman pottery. The identification of "grass-marking" on Roman jars found at Penhale Round adds a new dimension to the study of material culture of this period (see section 5.6.4). Some discussion of the chronological implications of this discovery will be relevant for our understanding of Roman period ceramics in Cornwall as a whole (Aims: LRA3; RRP7; L3 - tasks 21 & 24).

- The pilot study on organic residues has successfully shown the potential for this type of work on Roman pottery and appropriate analysis will be a significant advance in the study of pottery for this period. In addition, one of the most significant contributions of this ceramic assemblage is the identification of variants of gabbroic clay used in pottery manufacture during the Roman period, since this may provide insights into contemporary patterns of trade and exchange. This is the first time that such clays have been recognised in an assemblage of this date, whilst the importance of supporting reliable scientific dating has been stated in section 5.6.4. Once secure petrological definitions for this clay have been made, the specifications for future research should became clearer (Aims: RRP7 - tasks 18, 21 & 24).

- A selection of pieces of stonework from Roman contexts at Penhale Round will be examined for geological identifications so that patterns in local contact and exchange may be recognised. A selection of this material will also be examined for evidence for metalworking, and in particular will be examined in conjunction with the results of the assessment of the small assemblage of slag. A descriptive classification of the stonework assemblage will be produced in a review of the range of activities which are likely to have taken place when the round was occupied (Aims: RRP9; T7 - tasks 19, 20 & 25).

- The study of site formation processes and in particular, the character of refuse and discard behaviour at Penhale Round will form part of the general analysis of the material culture recovered during the excavation. The ceramic study will contribute to these themes in particular - the detailed study of two "closed" groups (see section 5.6.4) is of particular relevance here. Issues concerning the re-use and inheritance of earlier cultural artefacts in addition to some commentary on the nature of site deposition will be made and thereby contribute to a overall analysis of behaviour during the occupation of the round. Such studies are of particular relevance to later Iron Age and Roman settlement studies where discard behaviour has been shown to be highly formalised and reflect set cultural practices (cf. Hill 1995) (Aims: RRP8; P9 - tasks 24 & 52).

- An assessment of the macroplant fossil remains has shown that there is a good range of material from different types of contexts and different structural phases of Penhale Round. Their detailed study will contribute significant data to the corpus of information through which we understand the economic character of Iron Age and Roman period settlement, which for Cornwall is still very patchy (see Straker in SWAF papers, 1996) . Furthermore this has been highlighted as an important research objective (see Quinnell 1986). Their study will also chart any changes or differences in agrarian practices during the

occupation of the round. Such data could be usefully compared with the results from the Neolithic and Bronze Age contexts and will add to a discussion of the changing ecology of the local landscape (Aims: RRP13; RRP16 - task 37).

- The animal bone assemblage was small and very poorly preserved and with the majority having been burnt, only few could be fully identified to species level. The majority of bone fragments were of cattle, although sheep and goat were also identified. Some comment on the character of the assemblage will be produced alongside reference to other less direct evidence for animal husbandry in the form of spindle whorls and organic residues on a selection of ceramics. *Note*: the data for this category of material jhas already been analysed and the discussion will contribute to aims RRP16 & P8 - task 53).
- An account of the development of the contemporary landscape within the immediately vicinity of the round will complement and enhance analysis of a study of changing land-use within this zone of the project area. This will permit a broader picture to be reconstructed incorporating some general commentary on past attitudes towards inherited landscapes. In particular the relict Bronze Age evidence will be examined and its impact and influence on the character of later settlement at this location discussed (Aims: RRP19; PC4 - task 52).
- A map of the area will be produced which shows the locations of other enclosed settlements - rounds - within a radius of 10 kilometres around Penhale. There are a number of univallate earthworks within St.Enoder parish particularly around the Summercourt area (see PRNs: 22256 and 22257 in Cornwall and Isles of Scilly Sites and Monuments Record). Some comment on the distribution of these sites within this general landscape would be useful (Aim: LRA3 - tasks 52 & 61).
- No other sites of this period were found within the project area except perhaps for the enigmatic oven site found at Black Cross. If this feature is confirmed to be of Roman date by radiocarbon dating, then comparison of economic data from Black Cross and Penhale Round would be extremely interesting. A summary account of the feature will be produced accompanied by a plan (Aim: LRA3 - tasks 5 & 57).
- The contents of pit [128] found at Pedna Carne will be analysed. If a Roman date is obtained from this pit then the archaeobotanical material will be compared with similar deposits. An early date for this feature high up on Pedna Carne would be of interest and add to the discussion about land-use for this period in the project area (Aim: LRA3 - tasks 5 & 57).

18.6.8 **Early medieval landscape** (c 400 AD - 1066 AD) by Jacky Nowakowski

The study area embraces parts of two parishes: St.Columb Major and St. Enoder, both of which were situated in Pyder Hundred. The manor of St. Enoder appears in Domesday as *Heglos-Enuder*; before the Conquest it had been held by Godric under the church of St. Petrock at Bodmin (Henderson 1956, 144). St. Columb Major was not recorded at the time of the Norman conquest, the church being rebuilt by the Arundells during the thirteenth

century whilst the town was first named in a charter as part of the Manor of Lanherne (Henderson 1956, 82; Rabey 1979, 29). The identification of early medieval settlement through place-name analysis (particularly those prefixed by **tre, ker, car** and **bod**) shows that a small number of places in St. Enoder parish had pre-Norman origins. Trewheela and Trevarren were the earliest documented place-names in the project area (Gover 1948; Rose, Herring and Nowakowski 1992). Two inscribed stones of 5th to 6th century date - one outside St Francis Mission Church in Indian Queens and the other outside St Columb Major church - are relicts from this period (Thomas 1994, 282-283). The Indian Queens stone was moved to this position during a road widening scheme but it had formerly marked the boundary between St Columb and St Enoder parishes (Rabey 1979, 15). With perhaps the exception of Deep Lane which has been identified as part of an early medieval highway named in a Cornish Anglo-Saxon charter dated 1049 (Herring and Hooke), there were no obvious "sites" dating to the early medieval period within the road corridor and it was hoped that further discoveries would be made during the watching brief and hedge recording programme. In the event little new information on the character of early medieval settlement and landscape was gained. The discovery however of a small group of "grass-marked" pottery found at Penhale Round could indicate some reuse of the round following its abandonment in the later Roman period although the exact character of such "re-occupation" is difficult to appraise. The investigation of Deep Lane was designed to gather evidence which would support an early medieval origin for the highway (Rose, Herring and Nowakowski 1992, 50-51). The excavation did not produce conclusive results but served to highlight the methodological problems associated with dating ancient paths and routeways by excavation alone.

Summary aims

- A synthetic account of the investigation of Deep Lane will be presented alongside the historical research on local boundary charters carried out by Herring and Hooke (Herring and Hooke 1993). Some commentary may be appropriate here on other ancient routeways and trackways noted in the project area such as the sunken lane (PRN: 33955) at Black Cross (see section 15.2.4). The problems of dating such routeways by excavation alone will be highlighted (Aim: LRA4 - task 55).
- The small collection of "grass-marked" pottery found at Penhale Round is significant. This is the first discovery of such material from this type of monument and its study is therefore of local as well as regional importance (Aim: RRP7 - task 27).
- Although no clearly early medieval field boundaries were identified, some comment on the problems of detecting field systems of this period may be made (task 55).

18.6.9 The Later Medieval landscape (1066 - c.1550 AD) by Jacky Nowakowski

Documentary evidence, namely place-name analysis, reveals that by the medieval period there were a number of small farmsteads in the area - these mostly having been established around present day Fraddon and to the north of St. Columb Road. Halloon (*Hellanwoen*) was first documented in 1334, Crugoes (*Crukcou*) in 1327, Killaworgey (*Kylworge*) in 1320, Fraddon (*Frudan*) in 1327, and Penhale (*Penhal*) in 1327 (Gover 1948). Gaverigan

(*Gaverguen*, *Goverguen*, *Govergwyn*) has an early reference in Assize Rolls dated 1302 although this would have referred to the Manor of Gaverigan owned by the Gaverigan family (see below). By this date the settlement pattern established during the early medieval period had both consolidated and grown, filling up "anciently enclosed" land. No physical evidence for the characteristic medieval open field system of individual strips of land were apparent in the field patterns in the project area - as for example can be seen just several kilometres to the east of the study area at Belowda and Tregoss (see Nowakowski 1997), although remnant traces of an earlier field system - perhaps of medieval date - were surveyed at Halloon Farm.

The enclosed land in the project area can be broadly regarded as being a mixture of medieval and post-medieval in date. The nineteenth century Tithe Apportionment Schedule shows that enclosed land was used for both arable and pasture, and to some degree this must reflect a mixed farming regime typical of the general area since the medieval period. Mining for tin played an important role in the local economy throughout the medieval and later periods as is evident in the streamworks and prospecting pits found within both higher and lower zones of the study area. Charles Henderson noted that there were tinners living at Trevarren and Ruthvoes (lying to the east of the study area) during the 14th century and that in Patent Rolls dating to 1309, one of the major landowners in the area, the Parson Ralph de Arundell, took refuge in the parsonage at St. Columb from an angry mob of tinners from the villages of Ruthvoes and Trevarren on whom a levy for unpaid dues had been imposed (Henderson 1930, 9). The Manor of Gaverigan situated on the edge of Goss Moor was the patrimony of the Gaverigan family in 1361. Walter Gaverigan made a small fortune in tin - an inheritance which was passed on down the family throughout the centuries (Henderson 1930, 66). This mine was one of the richest ventures in the area and was worked into the mid. nineteenth century (Dines 1956, 528). Hamilton Jenkin notes that an advertisement in the *West Briton* in 1835 mentioned "no less than five alluvial tin setts in this neighbourhood...the largest of these appears to have been the Mingam sett which was stated to have been producing tin for more than 300 years" (1964, 57).

Analysis of the growth and character of later historic landscapes can progress by examining the patterns of medieval and later settlement through changing land-use and the processes of enclosure. The results of the field boundary recording programme is therefore very significant in this respect since this type of information can only be recovered by archaeological fieldwork given that historical documents rarely shed light on this aspect of rural life. In addition the study of the physical remains of medieval cultivation practices (such as the Mayfield Farm ridge and furrow site and the extant field system at Halloon Farm, together with the early highway of Deep Lane holloway) may all contribute information on rural life in medieval and post-medieval Cornwall. In summary therefore, although farming must have been the main basis of the economy of this area throughout the medieval and later periods, rich deposits of tin would also have played an important role in the local economy and influenced the establishment of both early and later settlement.

Summary aims

- A summary account of the investigation of medieval cultivation ridges at Mayfield (PRN: 33952) will be produced. The significance of its survival in a lowland context will be commented on and its (probable) relationship with the growth of Trevarren (a medieval hamlet) will be discussed (Aim: RRP20 - task 55).
- A descriptive summary of the medieval field system (PRN: 33954) surveyed at Halloon Farm will be produced. This will also incorporate some results of the hedge recording programme and form part of a larger discussion on the structural histories of boundary types in the project area (see below). A plan of the system will be published (Aim: RRP20 - tasks 55 & 57).
- A map will be produced showing the distribution of early medieval, medieval and post medieval settlements in the parishes of St.Enoder and St. Columb Major, indicating aspects such as the character of the place-names and their likely date. This will provide a context for discussion and analysis of the project results, including the field boundary sections. A map could also show the distribution of IA/RB settlements, helping to illustrate any discussion of the changing pattern of settlement (Aims: LRA5; RRP20; RRP21 - task 55).
- A descriptive and discursive account of those field boundaries considered to be medieval in date in areas of **anciently enclosed land** (AEL) will be produced. These results will be compared with those of clear post-medieval origin. The earlier boundaries were found in the lower lying zones of the project area such as Halloon (PRN: 33954), Trewheela (PRN:33966) and Penhale (PRN:33964). The structural histories of these features together with those recorded at May's Farm, Black Cross, Mayfield and Crugoes will provide an overview of processes of land-use and change in the project area. Of particular interest is the apparent evidence for processes of radical transformation (where earlier systems may be completely modified and reorganised) as appears to be the case at Penhale Round, Penhale Moor and Halloon Farm, where the legacy of a prehistoric and Roman agrarian landscape appears to have been completely ignored (Aim: RRP21 - task 55).
- An account of the ditch complex found at Black Cross may well be appropriate in this section, despite the absence of direct dating evidence. This would be a useful area for further geophysical survey work (Aim: RRP21 - task 57).
- Some comment on the apparent demise of Penhale Round as a settlement during the medieval period will be produced and in addition, the reuse as "Fair Field" as Penhale Fair (Aim: RRP20 - task 55).
- Whilst fairly sizeable collections of ceramics dating to the medieval period were recovered during excavation and fieldwalking at Halloon Farm and Penhale Moor, all were from secondary deposits. Some comment on their discovery with particular regard to documented settlement is relevant although no detailed statement is required. Given the general paucity of well-documented collections of medieval pottery from rural settlements in the

county, this material could be useful within a future research programme relating to medieval material culture (Aim: RRP21 - task 56).

- Some further research into historical and documentary sources for this period is recommended. In particular, place-name analysis and any early documents which may be used to provide a settlement map (see above) (Aim: LRA5 - tasks 55 & 61).

18.6.10 The post-medieval landscape - Agrarian and Industrial by Jacky Nowakowski

Growth of settlement and routeways

The only settlements shown on John Norden's map of the area in 1597 - Penhale, Collumbe magna (St. Columb Major) and St Dennis - were probably included because they were the main centres of population. Penhale, as Henderson noted, appeared to be the nucleus of a large agricultural region with its location on a major highway making it an important settlement. The yearly fair held at Penhale since medieval times continued to be an important annual event right up to the early eighteenth century when it moved to Summercourt (Stokes and Darch - undated reference).

Gascoyne's late 17th century map of the area provides a better picture of all the farming settlements and thoroughfares in use at that time. In addition to the long-established medieval settlements on low-lying land, Gaverigan (*Gavrian*) and Higher Fraddon (*High Fradham*) were shown indicating the importance of unenclosed moorland and common for rough pasture, fuel and tin. The major thoroughfare across this landscape was a routeway which closely followed the line of the former A30 (prior to the construction of the bypass in 1993). This ancient routeway, whose origins are likely to be medieval, formed part of the major highway through the county but was only formally listed as a turnpike road in the latter part of the eighteenth century (Spreadbury 1971, 9). There was a major highway junction near Fraddon and Trewheela but the relatively isolated positions of Halloon (*Haloone*), Killaworgey (*Killaverge*) and Trevarren (*Trevarran)* are both anomalous and interesting.

On Martyn's map of 1748 a greater network of roads and trackways were shown linking the settlements and farmsteads. The entire area immediately to the east of Fraddon was shown as common criss-crossed by a cobweb of unmetalled trackways whilst proper lanes and highways appear to be confined to the areas of **anciently enclosed land.** On Higher Fraddon Down symbols for tin mines are shown.

The village of Indian Queens is one of the more recent settlements in the project area having grown along the turnpike road which was opened up in 1769 linking Fraddon with Bodmin. The coaching inn established by Francis Symonds in 1780 which was called the "The Queen's Head", gave its name to this settlement which had previously been known as "White Splat" (Henderson 1930, 67). St. Columb Road grew around the arrival of the railway which serviced the small china clay works near Halloon at Trevarren Green (PRN: 33958) during the latter part of the nineteenth century (Henderson 1930, 67). Kelly's Directory of 1893 includes a reference to the "North Cornwall Brick and Tile Co lime, brick and tile manufacturers, Halloon".

It appears to be within the **recently enclosed land** (REL) areas that the greatest changes took place, there having been an increase in the overall population whilst industry, mainly metal mining but also clay working and brick making stimulated the enclosure of traditional rough upper land at Higher Fraddon and Little Gaverigan. This area is characterised by rectilinear fields.

Summary aims

- A descriptive and discursive account of those field boundaries considered to be post medieval in date in areas of **recently enclosed land** will be produced. These results will be compared with those of medieval origin. The later boundaries in the main lie in the higher zones of the project area at Little Gaverigan and Highgate Farm, Higher Fraddon, and Pedna Carne but also in boggy areas such as Goss Moor and The Kelliers. Structural histories and boundary types will be compared. Some comment on the influence of earlier boundaries within these zones will also be made (Aims: LRA5; RRP21 - tasks 57 & 58).
- At Pedna Carne and on Higher Fraddon Down rather disparate and limited evidence for later and post-medieval agricultural activities were found in the form of ditches (removed boundaries). These require no further structural analysis though some comment on their presence in this upper landscape zone would illustrate the processes of changing land-use in the area. At Pedna Carne in particular geophysical survey may be useful to throw further light on the extent and character of buried remains (Aims: LRA5; RRP21 - task 57).

Industrial

"St. Columb (which is also a borough) has the advantage of a decent, paved street, and is a churchtown... There are some streamworks in the neighbourhood, which produce the wood-tin"
(Maton 1794-6 in Gibson 1968).

The importance of rural industries other than farming must also not be overlooked given that the early tin mining industry played an important social and economic role in Cornwall from the medieval period onwards. The study of the early mining sites examined in this project - Queens Mine, the Kelliers and Mayfield farm streamworks - will contribute to a county-wide assessment of this aspect of the Cornish economy. For such early sites - many of which are difficult to detect because of the destructive impact of later extensive mining operations - field survey as an archaeological technique is an important interpretative tool as different types of mining operations can sometimes be dated by the arrangements of earthworks.

Summary aims

- An account of The Kelliers streamworks (PRN: 33952) which is of probable later medieval date will be produced along with a plan (Aims: LRA6; RRP22; PC8 - task 58).
- A synthetic account of the work carried out at Queens' Mine (PRN: 33970) will be published along with plans (Aims: LRA6; RRP22; PC8 - task 58).

- Soil columns and samples collected from the Queens Mine investigation should be examined for their mineral content. These results could prove useful to a future research project (Aims: RRP22; PC8 - task 14).

18.6.11 Indian Queens - An Environmental History

"...soe to St. Culomb (St Columb Major) I went a pretty long 12 mile; here I met with many rows of elm trees which I have not found in any country except Wiltshire, there were mostly soe, tho'there were alsoe ashes and oakes; the hedges were hazelthorne and holly but to see soe many good rowes of trees on the road is surprising.." (The Journeys of Celia Fiennes in the 17th century).

"At Penhale or Pen Haile, which signifies "the head of the moor", are the original springs or sources of two rivers, which find their way to the sea in opposite directions; one discharging its waters into S.Clements Creek at Tresillian Bridge, and the other joining the Bristol Channel on the north, through the Ganel at Crantock" (Polsue 1867, 343).

Throughout the project a major objective has been the collection of a range of environmental data, both from the routine sampling of well-sealed archaeological deposits within individual sites and features and as from isolated places where good palaeo-environmental material has survived. The range of information collected comprised charred plant remains, charcoal, pollen, peat deposits and soil samples from contexts interpreted as buried soils.

Whilst a vast collection of environmental samples was recovered during each excavation, unfortunately only two sites of buried peat were detected. Whilst it was generally possible to predict where background (peat) deposits may exist, it was certainly disappointing that only two suitable sites were found. Detection strategies rely on general surface indications - peat can be expected in wetter areas were the vegetation is marshy - but, as was the case in this project, some predictions were unfortunately inaccurate. There is a strong case, therefore, for environmental archaeologists to be consulted at a very early stage in any project of this nature, particularly so when preliminary geotechnical work is being carried out by the road planners. If possible, it would be extremely useful for environmental archaeologists to be part of the field team carrying out geotechnical work so that soil cores can be examined immediately after they had been extracted. This would allow archaeologists to be more informed at the outset about the potential survival of such useful deposits and allow more realistic responses to be developed at early stages in projects.

Summary aims

- The analysis of samples recovered from individual sites will reveal much about the local environmental background of each locality as well as about past economic farming practices for different periods from the Neolithic right through to the later Roman period (Aims: RRP16; P8 - tasks 37 & 53).
- General background information is provided by the well-buried peat sequences found at Halloon Farm (Aim RRP14 - task 35).

- The good pollen record at Gaverigan, Highgate and Halloon will enhance the study of local vegetation histories (Aims: RRP14; T9; P6 - tasks 5, 35 & 53).
- Charcoal identification will provide important data on the choice of wood used for construction and fuel by communities living in the area from the Early Neolithic to the late Roman periods. It is very unusual to have the opportunity to study woodland use in a landscape over such an extensive time period, and, as well as contributing information on the use of wood for different purposes, the results will also be compared with what is known about the vegetation history of the area. Pollen assessment data is available principally from Little Gaverigan, Penhale Round and Halloon, but as the lack of peat deposits means that as a complete sequence covering the area is unlikely to be forthcoming, the additional data from the charcoal analysis (albeit only representing part of the vegetation community) will be especially valuable (Aims: RRP15; T7 - tasks 6, 7 & 53).
- The unusual composition of a sample taken for soil analysis from the fill of a ditch at Penhale Round has been singled out for further laboratory analysis. This poses a research problem which is not directly relevant for interpretative purposes at Penhale but could form part of a future research programme. No clear buried soil was found at Penhale Round which was a disappointment (task 38).
- Despite a fairly thorough search in all of the hedges sections which were recorded during the watching brief programme no secure buried soil was found which was susceptible to sampling and analysis. Some comment on the absence of this type of data may be appropriate in the light of other results gained from similar studies in the county (see section 15.2) (task 53).
- The analysis of soil samples recovered from Little Gaverigan Barrow will be important in helping to identify the presence or absence of a buried soil layer beneath the turf mound of the barrow as this has clear implications for an overall interpretation concerning the use and construction of the barrow (Aim: T9 - task 38).

18.6.12 Final passing observations

In conclusion the A30 project has provided information which will contribute to the study of various strands of Cornish history and in doing so has helped us encounter past and forgotten landscapes. When collectively analysed these results will provide a major contribution to landscape studies as a whole.

In our review of the work several striking important points have emerged. The Indian Queens-Fraddon bypass avoids modern settlement but in doing so reveals the earlier history of areas whose character and functions have changed much over time. This study has shown that places like Indian Queens - whose landscape is relatively unremarkable and one which may not rank highly in archaeological databases - can prove extremely interesting, given the opportunity for examination in detail. This road scheme has provided an opportunity to look hard at a tract of countryside and to demonstrate its historical depth beyond the confines of monument or site-specific archaeology. The use of

a landscape approach has been important in this respect. This scheme has also shown the value of PPG 16 and similar planning guidelines where co-operation between developers, landowners, the local community and archaeologists has been extremely important and excellent results have been achieved through integrated working practices and continuing consultations.

In this respect, such road schemes should be seen in a positive light, as long as the needs and interests of all parties are considered through consultation. If local people were asked to list areas of archaeological importance it is unlikely that Indian Queens would immediately spring to mind. Yet this project has in some ways helped to alter this view and may serve to inspire a developing respect for the hidden heritage of this typical part of mid. Cornwall.

18.7 PUBLICATION AND PRESENTATION

18.7.1 Provisional Outline structure of the final report - Summary

The results of this project will be published in a monograph which can be produced by the Technical Services dept of the Planning Directorate, Cornwall County Council. Production estimates are presented in section 18.9.10. A summary outline of the proposed publication is as follows:

Proposed Title: *Bypassing Indian Queens - An Account of the Archaeological Investigations of Early Settlement and Landscape in mid Cornwall between 1992- 1994* by Jacqueline A Nowakowski with Philippa Bradley, ?Sarnia Butcher, Matthew Canti, John Davies, Richard Evershed (and assistant), Rowena Gale, James Greig, Jenni Heathcote, Peter Herring, Simon Mays, Alison Roberts, Peter Rose, Dale Serjeantson, Henrietta Quinnell, Adam Sharpe, David Starley, Vanessa Straker, Roger Taylor, Carl Thorpe and David Williams. (+ Alex Bayliss?) + someone from *Ancient Monuments Laboratory* (? - on geophysical surveys).

With illustrations by Rosemary Robertson.

Summary outline

Chapter Headings	*Word estimate*
Abstract	800 words
Introduction and background	4,500 words
The Mesolithic Landscape	1,500 words
The Neolithic Landscape	11,600 words
Early Bronze Age Ceremonial Landscape	30,050 words
Early Bronze Age Lowland Landscape	4,750 words
Middle Bronze Age Landscape	34,850 words
Later Prehistoric Field Systems - The late Bronze Age to Iron Age Landscape	13,800 words
Late Iron Age and Roman Settlement	32,400 words+
The Historic landscapes from Early Medieval to the Post Medieval periods	10,600 words+
Indian Queens - The Environmental Contribution	4,500 words

Overview and Conclusions	5,000 words
Bibliography	2,500 words
	158,400 words+
	Approximately 160,000 words

Figures
28 general maps
83 site plans
187 artefact illustrations - prehistoric pottery, stonework, clay objects, flints etc.,
1 schematic drawing
7 reconstruction drawings
9 Photographs

Tables
38 tables

18.7.2 Detailed Outline - First Draft

A more detailed breakdown of the proposed publication follows:

Abstract - summary **800 words**

Introduction by Jacky Nowakowski
- Background and primary project objectives 1991-1992
- Overall Character of the Archaeological and Historical Landscape
- Updated Research Objectives 1992-1994
- Descriptive summaries and main phases of land-use **2500 words**

Method Statements by Jacky Nowakowski
- Overall Strategies
- Detection and Evaluation
- Pilot study and reconnaissance 1991-1992
- Data collection
- Finds policy
- Environmental sampling strategies
- General discussions of the Geophysical Surveys by AMLab?
- Penhale Round
- Penhale Moor
- Halloon Farm
- Notation and archive **2000 words**

FIGURES - General
1. Location plan of project
2. Locations of sites discussed in text
3. Locations of geophysical surveys

THE MESOLITHIC LANDSCAPE

Summary Account of discoveries of Mesolithic material on A30 project

by Jacky Nowakowski 500 words

A general commentary and discussion by Alison Roberts

Artefacts

Description of illustrated artefacts 1000 words

FIGURES - Mesolithic landscape

1. *Artefacts illustrated:*
   Scalene triangle - PM94
   Bladelet with retouch - PM94
   Oblique point SF <2975> - PR93
   Lanceolate point SF <4383> - PR93
   Scalene Triangle SF <2955> - PR93
   Microlith SF <400> - GV92
   Awl SF <406> - GV92
   Microburin SF <441> - GV92
   Whetstone from HF93/WB94 Group I
2. Distribution map showing Mesolithic findspots up-date on current knowledge in the South-West.

THE NEOLITHIC LANDSCAPE

Synthetic account of Structural Data

- Excavation methods and strategies
- Stratigraphic and structural data found at Penhale Round by Jacky Nowakowski 1500 words

Artefacts

- Description and discussion of ceramics from PR93 by Henrietta Quinnell 3000 words
- Petrological study of ceramics by David Williams and Roger Taylor 250 words
- Description and discussion of lithics by Philippa Bradley 500 words
- Commentary on stonework and geology by Henrietta Quinnell and Roger Taylor 500 words

Archaeobotanical Data - Environmental and Economic Data

-Macroplant remains from PR93 - **Group 1 samples** by Vanessa Straker 750 words

-Charcoal remains from **Phase 2** - PR93 by Rowena Gale includes table 850 words

-Organic residue analysis from PR93 by Richard Evershed and Research assistant 300 words

Overall Dating - The Cultural Context

-Radiocarbon dating of contexts from PR93 by Jacky Nowakowski and ?Alex Bayliss — 700 words

Other Contemporary data in the project area

- Neolithic ceramics from Halloon Farm and Penhale Moor by Henrietta Quinnell with comment on petrology by David Williams — 950 +words
- Neolithic lithics from Halloon Farm and Penhale Moor by Philippa Bradley — 300 words

Discussion and Broader Interpretation

Synthetic discussion by Jacky Nowakowski with Henrietta Quinnell
- to include contextual analysis
- general contribution of ceramics study
- on-site formation and structured deposition
- significance of data to regional and national research frameworks and in particular highlight issues of use of distant resources
- general commentary on spatial extent of Neolithic activities within mid. Cornwall. — 2000 words

FIGURES - Site plans

1. Location plan of Neolithic findspots in the project area.
2. Figure showing findspots of uncontexted Neolithic pottery found in the south-west.
3. Location of Neolithic features found at Penhale Round - phase 2
4. Detailed plan of structures [6652], [3299] and pit [254].
5. Section of pit [254]
6. Plan of vessels in pit [254] showing "structured deposition" - site plan GRE:643

FIGURES - Neolithic Artefacts

1. *Artefacts illustrated*:
   5 vessels from pit [254]
   Selection of flint from pit [254]
   Sponge finger stone from pit [254]
   Quern fragment from pit [254]
   3 items of flint from Halloon Farm

TABLES

1. Macroplant remains from PR93 - **Group 1 samples**
2. Charcoal analysis from **Phase 2** - PR93
3. Organic residue analysis

EARLY BRONZE AGE CEREMONIAL LANDSCAPE

General commentary and background by Jacky Nowakowski — 600 words

Little Gaverigan Barrow

Introduction

- Excavation methods and strategies
- Stratigraphic and structural account and Phasing by Jacky Nowakowski — 3000 words

Artefacts

- Description and discussion of ceramics by Henrietta Quinnell — 3500 words
- Description and discussion of stonework by Henrietta Quinnell includes table — 2000 words
- Description and discussion of lithics by Philippa Bradley — 500 words
- Discussion of residue analysis by Richard Evershed and Research assistant — 300 words
- Results of petrological analysis of ceramics and clay by David Williams and Roger Taylor — 250 words

Archaeobotanical Data - Environmental Evidence

- Results and discussion of pollen analysis - barrow ditch and mound by Vanessa Straker /or James Greig — 1500 words
- Results and discussion of plant macrofossil assemblage by Vanessa Straker — 1000 words
- Results and discussion of buried soil analysis by Jenni Heathcote and Matthew Canti — 1500 words
- Results and discussion of charcoal identifications by Rowena Gale (includes table) — 1200 words

Overall Dating - The Cultural Context

-Radiocarbon dating strategy and results by Jacky Nowakowski and ?Alex Bayliss — 600 words

Discussion and Broader Interpretation

Synthetic discussion by Jacky Nowakowski with Henrietta Quinnell

- to include contextual analysis
- the evolution of a Bronze Age funerary monument
- the contribution to the study of ceremony and ritual
- the environmental background — 2000 words

FIGURES - Site plans

1. Location plan of Little Gaverigan Barrow, Highgate Ritual Enclosure and Highgate Pits
2. GV92 - Phase 1 (GRH:177/3)
3. GV92 - Phase 2 (GRH: 177/2)
4. GV92 - Phase 3 (GRH:177/4)
5. GV92 - Phases 4-5 (GRH:177/5)
6. Ditch sections GV92 Quadrant 4 (GRH:177/9)

7. a. GV92 E -facing section Quadrant 2
   b. GV92 E - Facing section Quadrant 1 (GRH:177/10)
8. a. GV92 N - facing section Quadrant 1
   b. GV92 N - facing section Quadrant 4 (GRH:177/11)
9. GV92 Pre-turf mound features (GRH:177/8)
10. Excavation in progress at GV 92 - ?tower shot

FIGURES - **Early Bronze Age Artefacts**

1. Pebble hammer
2. 4 flints
2. Collared urn SF <432>
3. Pygmy vessel SF <438>

TABLES

1. Stonework objects from GV92
2. Results of pollen analysis - barrow ditch and mound
3. Plant macrofossil assemblage
4. Charcoal analysis
5. Organic residue analysis
6. Buried soil analysis - analytical data - 2 diagrams

Highgate Ritual Enclosure

Introduction

- Excavation methods and strategies
- Stratigraphic and structural account and Phasing by Jacky Nowakowski 700 words

Artefacts

- Description and discussion of ceramics by Henrietta Quinnell 2000 words
- Results of clay analysis inside vessel SF <324>. 200 words
- Results of analysis of red fibrous material inside vessel SF <324> 150 words
- Description and significance of leaded bronze awl SF <324> by ?Stuart Needham to include results of semi-quantitative analysis 300 words
- Discussion of residue analysis by Richard Evershed and research assistant 250 words
- Results of petrological analysis of ceramics and clay by David Williams and Roger Taylor 250 words
- Description and discussion of cup-marked stone found in watching brief programme by Henrietta Quinnell 1000 words

Human Cremation Analysis

- Discussion of cremation and significance of data by Simon Mays and Jacky Nowakowski 500 words

Archaeobotanical Data - Environmental Evidence

- Results and discussion of pollen analysis by Vanessa Straker and James Greig — 700 words
- Results and discussion of charcoal identifications by Rowena Gale (includes table) — 1000 words

Overall Dating - The Cultural Context

-Radiocarbon dating strategy and results by Jacky Nowakowski and ?Alex Bayliss — 600 words

Discussion and Broader Interpretation

Synthetic discussion by Jacky Nowakowski with Henrietta Quinnell
- the evolution of a Bronze Age funerary monument
- its contribution to the study of early Bronze Age funerary studies and ritual
- the environmental background
- significance of results in terms of the study of a local landscape

1000 words

FIGURES - Site plans

1. HG93 Site plan
2. Section across cremation pit
3. HG93 Ritual landscape showing locations of Highgate Ritual Enclosure, Little Gaverigan Barrow and Highgate Pits

FIGURES - Early Bronze Age Artefacts

1. Collared urn SF <324>
2. Leaded bronze awl - photo

TABLES

1. Results of pollen analysis
2. Charcoal analysis
3. Organic residue analysis

Highgate Pits

Introduction

- Excavation methods and strategies
- Stratigraphic and structural account and Phasing by Jacky Nowakowski — 1000 words

Archaeobotanical Data - Environmental and Economic Evidence

- Results and discussion of plant macrofossil remains analysis by Vanessa Straker — 500 words
- Results and discussion of charcoal identifications by Rowena Gale (includes table) — 900 words

Overall Dating - The Cultural Context

-Radiocarbon dating strategy and results by Jacky

Nowakowski and ?Alex Bayliss 600 words

Discussion and Broader Interpretation by Jacky Nowakowski
to include
- consideration of the character of the site
- its relationship with Little Gaverigan Barrow and Highgate Ritual Enclosure
- general landscape setting during prehistory and later land-use
includes a reconstruction of the ritual landscape 1000 words

FIGURES - Site plans

1. Plan of arrangement of Highgate Ritual Pits - HR93
2. a. HR93 South -facing sections across pits [1], [4] and [7]
   b. HR93 South-facing sections across pits [10] and [98]
3. a. HR93 N- facing sections across pits [9] and [29]
   b. HR93 N- facing section across pit [8]
   c. HR93 West-facing sections across pits [11], [107] and [108].

TABLES

1. Dimensions and Depths of Highgate Pits
2. Results of plant macrofossil remains analysis
3. Results of charcoal analysis

FIGURES - Reconstruction

1. Reconstruction of ritual landscape at Highgate and Gaverigan from bird's eye perspective

EARLY BRONZE AGE LOWLAND LANDSCAPE

General commentary and background by Jacky Nowakowski 300 words

Account of structural evidence
-Pit [3189] found at Penhale Round - Phase 3
by Jacky Nowakowski 600 words

Account of Residual discoveries of Beaker/EBA material
-Summary of other contexts where Beaker/Early Bronze Age material was found - Mayfield Farm, Penhale Moor and Halloon Farm by Jacky Nowakowski 500 words

Artefacts
-Beaker pottery from Penhale Round by Henrietta Quinnell with comment on petrology by David Williams and Roger Taylor 500 words
-Amber bead SF <4288> from Penhale Round by Jacky Nowakowski and comments from another specialist 250 words

Archaeobotanical Date - Environmental and Economic Evidence

- Results and discussion of plant macrofossil remains analysis from pit [3189] **Group 2** samples PR93 by Vanessa Straker **500 words**
- Results and discussion of charcoal identifications **phase 3**
- **PR93** by Rowena Gale (includes table) **200 words**

Overall Dating - The Cultural Context

-Radiocarbon dating strategy and results by Jacky Nowakowski and ?Alex Bayliss **300 words**

Discussion and Broader Interpretation by Jacky Nowakowski

to include
- summary of data for this period
- significance of data from this period to the project area and for a regional overview of activities of this period in the South-West **600 words**

GENERAL SUMMARY

On the character of land use in the project area during early prehistory by Jacky Nowakowski and Henrietta Quinnell

to include
- discussion towards the construction of a ritual landscape
- discussion of lowland and upland behaviour
- distinctions between land-use in different topographical zones
- significance of the results of this work to regional research agenda for early prehistoric studies **1500 words**

FIGURES - site plans

1. Plan showing locations of findspots of material of Beaker date in the project area
2. Plan of phase 3 activities at Penhale Round
3. Plan and section of pit [3189] (see GRH:178/35).

FIGURES - Artefacts

1. Beaker sherd from Penhale Round
2. Amber bead from Penhale Round - photograph

TABLES

1. Results of plant macrofossil remains analysis
2. Results of charcoal analysis

MIDDLE BRONZE AGE SETTLEMENT - FARMING LANDSCAPES c. 1000 BC

General commentary and background by Jacky Nowakowski **500 words**

The results of geophysical surveys at Penhale Round and Penhale Moor — 750 words

The Bronze Age Landscape at Penhale Round - Site Phase 4

Introduction

- Excavation methods and strategies
- Stratigraphic and structural account and Phasing of structure [358] and other contemporary features by Jacky Nowakowski — 1000 words

Artefacts

- Description and discussion of ceramics including section on structured deposition by Henrietta Quinnell — 4500 words
- Description and discussion of burnt clays/daub by Henrietta Quinnell and David Williams — 500 words
- Discussion of results of petrological analysis by David Williams and Roger Taylor — 250 words
- Discussion of results of organic residue analysis by Richard Evershed and assistant — 400 words
- Description and discussion of stonework assemblage incorporating the results of technological and geological analyses by Henrietta Quinnell and Roger Taylor — 3000 words
- Description, spatial analysis and discussion of flintwork by Philippa Bradley — 600 words

Archaeobotanical Data - Environmental and Economic Evidence

- A comment on small fauna assemblage by Dale Serjeantson — 300 words
-Results and discussion of plant macrofossil remains analysis **Groups 4, 5, and 6 samples** - PR93 by Vanessa Straker — 500 words
-Results and discussion of charcoal identifications from **phase 5 - PR93** by Rowena Gale (includes table) — 1250 words
-Summary account of charred timber found in structure [358] by Caroline Earwood — 300 words

Overall Dating - The Cultural Context

-Radiocarbon dating strategy and results by Jacky Nowakowski and ?Alex Bayliss — 500 words

Discussion and Broader Interpretation by Jacky Nowakowski to include:

- consideration of site layout, structures and spatial extent of activities
- economic and social character of occupation
- use of resources giving insights into trade and exchange
- contextual analysis of data
- on-site formation processes including site abandonment and

structured deposition
- site ecology and environment
- general landscape setting 1500 words

FIGURES - Site plans

1. Location plan showing Middle Bronze Age discoveries within the project area
2. Site Phase 4 plan of excavations at Penhale Round
3. Excavation in progress on MBA structure 358 Area 3 - Stone build phase (CAU Archive GBP: PR93/1235).
4. Phase 1 build of Bronze Age structure 358 Area 3S (GRH: 178/5)
5. Phase 3 build of Bronze Age structure 358 Area 3S (GRH: 178/6)
6. a. West facing section across Bronze Age Structure [358] (GRH:178/7)
   b. North-East Facing Section Across Bronze Age Structure [358] (GRH:187/7)
7. Plan of vessel groups in structure [358]- (site plan GRE: 657)
8. Reconstruction of structure [358] - secondary phase

FIGURES - Artefacts

1. 9 sherds of pottery
2. Selected flintwork
3. Selected stonework

TABLES

1. Results of plant remains analysis
2. Charcoal analysis
3. Organic residue analysis

The Bronze Age Landscape at Penhale Moor - Site Phase 3

Introduction

- Excavation methods and strategies
- Stratigraphic and structural account and phasing of structures [1013] and [1018] and other associated features by Jacky Nowakowski 2500 words

Artefacts

-Description and discussion of ceramics by Henrietta Quinnell 5000 words
-Description and discussion of burnt clays/daub by Henrietta Quinnell and David Williams 500 words
-Discussion of results of petrological analysis by David Williams and Roger Taylor 250 words
-Discussion of results of organic residue analysis by Richard Evershed and research assistant 300 words
- Description and discussion of stonework assemblage incorporating the results of technological and geological analyses by Henrietta Quinnell and Roger Taylor 2000 words
- Description and discussion of flintwork by Philippa Bradley ?500 words

- Description and discussion of metalwork incorporating results of XRF analysis by Jacky Nowakowski with comments from Stuart Needham — 300 words

Archaeobotanical Data - Environmental and Economic Evidence

- Results and discussion of plant macrofossil remains analysis -by Vanessa Straker — 750 words

results of plant material identification in spearhead SF <1606> by Rowena Gale — 200 words

- Results and discussion of charcoal identifications by Rowena Gale (includes table) — 2000 words

Overall Dating - The Cultural Context

- Radiocarbon dating strategy and results by Jacky Nowakowski and ?Alex Bayliss — 700 words

Discussion and Broader Interpretation by Jacky Nowakowski to include:

- consideration of site layout, structures and spatial extent of activities
- economic and social character of occupation
- patterns of trade and exchange
- contextual analysis of data
- on-site formation processes including site abandonment and contribution of ceramic studies
- site ecology and environment
- general landscape setting — 2000 words

FIGURES - Site plans

1. Geophysical Survey Results - (Source: Ancient Monuments Laboratory English Heritage, Linford 1993)
2. Overall Site plan showing structures [1013] and [1018] and related features (GRH:183/1).
3. Plan of Penhale Moor area and location of features and finds discovered during watching brief (GRH: 183/17).
4. Bronze Age Structure [1013] - primary phase (GRH: 183/8).
5. Bronze Age Structure [1013] - secondary phase (GRH: 183/10).
6. South facing and north facing sections across hollow [1013] (GRH: 183/11)
7. East facing and west facing sections across hollow [1013] (GRH:183/11)
8. Bronze Age Structure [1018] - primary phase (GRH: 183/3).
9. Bronze Age Structure [1018] - secondary phase (GRH: 183/4).
10. Reconstruction of structure [1013]
11. Photograph of excavation in progress at Penhale Moor

FIGURES - Middle Bronze Age Artefacts

1. 15 sherds of pottery
2. Selected flintwork (x 10)
3. Selected stonework (x 5)

4. Copper Alloy spearheads - SF <1655> and SF <1606>.

TABLES

1. Results of plant remains analysis
2. Charcoal analysis
3. Organic residue analysis

GENERAL SUMMARY

On the character of the landscape during the Middle Bronze Age in the project area by Jacky Nowakowski and Henrietta Quinnell to include

- Commentary on contemporary material found in other uncontexted locations within the project area in order to provide a commentary on spatial extent of activities.
- Discussion on the character of enclosure for this period
- Contribution and significance of these results to the study of BA settlement in lowland contexts within the south-west
- Contribution of ceramic analysis for this period
- Commentary on observed cultural trends and practices regarding site abandonment

2000 words

FIGURES - Reconstruction

1. Reconstruction of Middle Bronze Age settlement and landscape showing buildings at Penhale Moor and Penhale Round - an aerial perspective.

LATER PREHISTORIC FIELD SYSTEMS - LATE BRONZE AGE TO IRON AGE LANDSCAPES c. 800-100 BC

General background and commentary on range of evidence from Penhale Moor, Penhale Round and Halloon Farm by Jacky Nowakowski — 750 words

Discussion of geophysical survey at Halloon Farm — 350 words

Late Bronze Age/Iron Age Activities at Penhale Round - Site Phases 5 to 6 and any contemporary evidence found at Penhale Moor

Introduction

Phase 5 - Penhale Round

Excavation methods and strategies. Stratigraphic and structural account and phasing of pit [3106] and associated features at Penhale Round - Phase 5 by Jacky Nowakowski — 700 words

Phase 6 - Penhale Round

Excavation methods and strategies. Stratigraphic and structural account of structure [5517] and associated pre-round field

system at Penhale Round - Phase 6 features by Jacky Nowakowski 1000 words

Residual activity at Penhale Moor
Possible comment on the material of LBA/EIA period found in secondary deposits at Penhale Moor by Jacky Nowakowski (see below*) 300 words

Artefacts - Late Bronze Age/early Iron Age

Description and discussion of ceramic evidence from Penhale Round incorporating the results of petrological work by Henrietta Quinnell, David Williams and Roger Taylor 2500 + words
*Some comment on any ceramics of LBA/EIA date identified through petrology at Penhale Moor by Henrietta Quinnell & Roger Taylor may be appropriate here 500 + words
-Discussion and description of stonework (from phases 5 and 6 at PR93) incorporating results of geological and technological (XRF) analyses by Henrietta Quinnell, Roger Taylor and specialist 1000 words

Archaeobotanical Data - Environmental and Economic Evidence

-Results and discussion of plant macrofossil remains analysis from **phase 5** contexts at Penhale Round (groups 9,11 and 16) by Vanessa Straker 500 words
-Results and discussion of charcoal identifications from **phase 5** contexts from Penhale Round by Rowena Gale (includes table) 1000 words
-Results and discussion of plant macrofossil remains analysis from **phase 6** contexts at Penhale Round (groups 17, 18 and 19) by Vanessa Straker 1000 words
-Results and discussion of charcoal identifications from **phase 6** contexts from Penhale Round by Rowena Gale (includes table) 1000 words
Overall commentary on environmental results for this period by Vanessa Straker 300 words

Overall Dating - The Cultural Context

-Radiocarbon dating strategies for phase 5 and 6 at Penhale Round and results by Jacky Nowakowski and ?Alex Bayliss with comments from Henrietta Quinnell 800 words

The investigation of an undated prehistoric field system at Halloon Farm

Introduction

- Excavation methods and strategies
- Stratigraphic and structural account and Phasing of Halloon Farm field system by Jacky Nowakowski 800 words

Results

Discussion of the results of the excavation and comparison of results with evidence from Penhale Round

by Jacky Nowakowski 500 words

GENERAL SUMMARY

On the character of the landscape during the Later Bronze Age and Early Iron Age in the project area by Jacky Nowakowski with Henrietta Quinnell

to include:

- a discussion of character of activities for this period and contribution of these results to Late Bronze Age/Early Iron Age studies in the South-West
- significance of dates for research of these periods in the South-west
- major contribution of ceramic evidence by Henrietta Quinnell
- discussion on land use, continuity and change in later prehistory
- economic and environmental change and local ecology 800 words

FIGURES - site plans

1. Location plan showing findspots of material of LBA/EIA date in the project area.
2. Penhale Round - Site phase 5
3. Plans and section of pit [3106] (GRH: 178/35 and 37)
4. Plan of gully [3111] (GRH:178/34)
5. Penhale Round - Site phase 6
6. Plan and sections across structure [5517] (GRH:178/38)
7. Photograph of Area 6 during excavation showing structure [5517] and ditches (CAU PR93/GBP: 3649).
8. Selected sections across field ditch sections found in areas 1, 2, 3, 4, 5 and 6 at Penhale Round
9. Reconstruction of structure [5517]
10. Geophysical survey results at Halloon Farm (Source: Bournemouth University, Sutherland 1991)
11. Areas of excavation at Halloon Farm
12. Excavation plan of area 3 - Halloon Farm
13. Excavation plan of area 4 - Phase 1 - Halloon Farm
14. Excavation plan of area 4 - Phase 2 - Halloon Farm

FIGURES - Artefacts LBA/EIA date

1. 5 sherds from PR93 though may be additional from Penhale Moor
2. Selected stonework from Penhale Round.

TABLES

1. Results of plant macrofossil remains analysis **phase 5** at PR93
2. Results of charcoal identifications from **phase 5** at PR93
3. Results of plant macrofossil remains analysis from **phase 6** at PR93
4. Results of charcoal identifications from **phase 6** at PR93

LATE IRON AGE AND ROMAN SETTLEMENT IN THE PROJECT AREA - c.100 BC TO 400 AD

General commentary and background by Jacky Nowakowski	300 words
Results of geophysical survey at Penhale Round	250 words

The excavation of Penhale Round

Introduction

Excavation methods and strategies	
Overall stratigraphic and structural account and main phases of Penhale Round by Jacky Nowakowski	800 words

The History of Occupation at Penhale Round - A Chronological narrative

- Synthetic account of early history of the round - phases 7.1 to 7. 3. A Uni-vallate settlement and field system *c.* 100?BC	600 words
- Synthetic account of the round - phases 7.4 to 7. 5. A Uni-vallate settlement and field system - Roman period date	300 words
Synthetic account of the round - phases 7.6 to 7. 7. A Uni-vallate settlement and field system - c.300 AD	500 words
Synthetic account of the round - phases 7.8 to 7. 9. A multi-vallate settlement and field system - c.300 - 400 AD	700 words
Description and discussion of structure [5045/2045]	600 words
Synthetic account of the round - phase 7. 10. A ?uni-vallate settlement and field system - c.late 400/ ?early 500 AD	300 words
Post-Roman summary	200 words

Artefacts - Late Iron Age and Roman

- Description and discussion of ceramics by Henrietta Quinnell	7000 words
- Description and discussion of burnt clays/daub by Henrietta Quinnell and David Williams	500 words
- Discussion of results of petrological analysis by David Williams and Roger Taylor	250 words
- Discussion of results of organic residue analysis by Richard Evershed and assistant	600 words
- Description and discussion of stonework assemblage incorporating the results of technological (XRF) and geological analyses by Henrietta Quinnell, Roger Taylor and another specialist	2500 words

- Summary comment on metalworking debris by David Starley ?300 words
- Description and discussion of ironwork by Henrietta Quinnell and ?Sarnia Butcher 1000 words
- Description and discussion of Roman coin SF <189> by John Davies 300 words

Archaeobotanical Data - Environmental and Economic Evidence

-Results and discussion of plant macrofossil remains analysis from:
Group 20 samples - **phase 7 LIA/ERP** ditches outside the round - all areas
Group 25 samples - **phase 7.5 Roman period** - Round ditches
Group 28 samples - **phases 7.6 - 7.7 Roman period** - ditches outside the round
Group 29 samples - **phase 7.7 Roman period** - features in entranceway
Group 30 samples - **phase 7.8 Later Roman period** - midden in entranceway
Group 31 samples - **phase 7.8 Later Roman period** - round ditches
Group 32 samples - **phase 7.8 Later Roman period** - features in entranceway
Group 33 samples - **phases 7.8 - 7.9 Later Roman period** - Ditches outside the round.
Group 34 samples - **phase 7.9 Later Roman period** - Round ditches
Group 35 samples - **phase 7.9 Later Roman period** - features outside structure [2045]
Groups 36 and 40 samples - **phase 7.9 Later Roman period** - Structure [2045]
Group 37 samples - **phase 7.9 Later Roman period** - Features in entranceway
Group 38 samples - **phase 7.10 Later Roman period** - post-occupation build up by Vanessa Straker 2000 words

-Results and discussion of charcoal identifications from
phase 7.1
phase 7.3
phase 7.5
phase 7.6
phase 7.7
phase 7.8
phase 7.9
phase 7.10 by Rowena Gale 2500 words

-Results and discussion of pollen analysis by James Grieg and Vanessa Straker 500 words

- Summary statement on fauna remains by Dale Serjeantson — 200 words

Overall Dating - The Cultural Context

-Radiocarbon dating strategies for history of occupation at Penhale Round and results by Jacky Nowakowski and ?Alex Bayliss and Henrietta Quinnell — 1000 words

Other Contemporary data in the project area

Black Cross Oven

Description and discussion of Black Cross Oven by Jacky Nowakowski — 300 words
- Results of archaeobotanical data by Vanessa Straker — 500 words
- Results of charcoal analysis by Rowena Gale — 250 words
- Results of radiocarbon dating by Jacky Nowakowski and Alex Bayliss — 200 words

Pedna Carne pit [128]

Description and discussion of pit [128] by Jacky Nowakowski — 100 words
- Results of archaeobotanical data by Vanessa Straker — 500 words
- Results of charcoal analysis by Rowena Gale — 250 words
- Results of radiocarbon dating by Jacky Nowakowski and Alex Bayliss — 100 words

Penhale Moor

Discussion of late Iron Age and Romano-British ceramics from Penhale Moor by Henrietta Quinnell — 1000 words

Discussion and Broader Interpretation by Jacky Nowakowski & Henrietta Quinnell to include detailed interpretation of Penhale Round
- consideration of site layout, structures and spatial extent of activities
- economic and social character of occupation
- patterns of trade and exchange
- contextual analysis of data
- on-site formation processes including discard behaviour
- site ecology and environment
- general landscape setting
- contribution of results to studies of enclosed settlement in the South-West
- commentary on the influence of past activities on site
- relationship with other rounds in the broader local landscape

3000 words

GENERAL SUMMARY

On the character of the landscape during the Late Iron Age and Roman periods in the project area by Jacky

Nowakowski

to include:
- Commentary on the spatial extent of activities for this period in the project area
- a consideration of economic and social land use during this period to compare with other periods in prehistory 1000 words

FIGURES - Site Plans

1. Location plan of Penhale Round at 1:2500
2. Archaeological features detected by geophysical surveys 1982, 1990-1 (Source: Ancient Monuments Lab, English Heritage)
3. Interpretative plan- Archaeological features detected by geophysical surveys 1982, 1990-1, 1994 (Sources: Ancient Monuments Lab & Barlett-Clark Consultancy)
4. Penhale Round - Areas of Archaeological Excavation 1993
5. View of excavation in progress at Penhale Round - Area 3 looking south - May 1993 CAU archive: GBP:PR93/3890
6. PR93 - Phases 7.1-7.3 Univallate Enclosure and field system c?100BC
7. PR93 - Phase 7.4 ? Univallate Enclosure and field system c.100BC
8. PR93 - Phase 7.5 Univallate Enclosure and field system Roman period
9. PR93 - Phases 7.6 - 7.7 Univallate Enclosure and field system c. 300 AD
10. PR93 - Phase 7.8 Multivallate Enclosure and field system c.300-400 AD
11. PR93 - Phase 7.9 ? Univallate Enclosure and field system c. 400 AD
12. PR93 - Phase 7.10 ? Univallate Enclosure and field system c. late 400/?early 500 AD
13. Section through primary ditch 5575 and later recuts showing position of soil sample
14. Composite section through Penhale Round ditches and ramparts - Area 3N (GRH:178/17).
15. Composite section through Penhale Round ditches and ramparts - Area 3S (GRH:178/18).
16. Tower shot of entranceway into Penhale Round looking south CAU Archive GBP:PR93/3665
17. Structure 2045/5045 SWEB 1 and Area 3N Phase 1 occupation (site phase 7.9) (GRH:185/4).
18. Structure 2045/5045 SWEB 1 and Area 3N Phase 2 occupation (site phase 7.10) (GRH:185/5 and 6).
19. Composite section through the entrance north-south
20. Location of SWEB 2 pipeline and discoveries made during watching brief in 1993 (GRH:186/1).
21. Tower shot of round entranceway showing primary ditch cut 5575 (CAU Archive GBP: PR93/6418
22. Reconstruction of round during its early history
23. Reconstruction of round during later phases of occupation
24. Reconstruction of structure [2045] - primary phase
25. Plan and section of Black Cross oven
26. Location map showing distribution of rounds within the wider area.

FIGURES - **Artefacts**

1. 35 sherds of pottery from PR93
2. 40 pieces of stonework from PR93
3. 6 pieces of ironwork from PR93
4. 3 sherds of pottery from PM94

TABLES

1. Results of organic residue analysis
2. Results of XRF analysis?
3. Results of plant remains analysis - PR93
4. Results of charcoal analysis - PR93
5. Results of pollen analysis - PR93
6. Results of plant remains analysis -Black Cross Oven
7. Results of plant remains analysis -Pedna Carne
8. Results of charcoal analysis -Black Cross Oven
9. Results of charcoal analysis -Pedna Carne

THE HISTORIC LANDSCAPES FROM EARLY MEDIEVAL TO THE POST MEDIEVAL PERIODS

Summary of background historical and archaeological data
and assessing the character of rural settlement in mid Cornwall by Peter Herring
to include -

- Background
- Introduction
- Aims and methods
- Identifying early medieval settlements through place-name analysis and archaeology in the area
- Distribution of settlement (early med. to post med.) in this area (looking at ?2 parish blocks).
- The context of the road corridor within the project area
- General character of the sites and landscapes affected 2500 words

Boundary Recording Programme Peter Herring with Jacky Nowakowski

- aims and methods
- relation of boundaries along corridor to farms, historic character areas etc.,
- results of work; character of boundaries; descriptions and synthesis; environmental evidence
- interpretation/discussion; comparison of boundaries in different zones; development of boundaries; historical development of boundaries
- commentary on the archaeological potential of field boundaries 2000 words

Distribution and character of medieval and post medieval artefacts Peter Herring with Jacky Nowakowski

- finds from excavation and watching brief

- general account of character of material; by period (including source of materials, range of types etc.,)
- interpretation of distributions in relation to different landscape zones i.e., Anciently Enclosed Land and Recently Enclosed Land. 1000 words

DISCUSSION OF MINOR RURAL SITES INVESTIGATED IN THE PROJECT AREA

Investigation of Deep Lane - An Early Medieval Highway

Background and Objectives by Jacky Nowakowski
Excavation results 450 words
Historical and Archaeological Interpretations by Peter Herring 450 words

Penhale Round Phase 8 - An Early Medieval Re-use?

Comment on early medieval data from Penhale Round
-Description and discussion of "grass-marked" pottery from PR93 incorporating petrological analysis by Carl Thorpe and David Williams 600 words
-Results of organic residue analysis on early medieval pottery by Richard Evershed and research assistant 300 words
Overall summary and significance of data and history of Penhale Fair by Jacky Nowakowski 200 words

Investigation of Cultivation ridges at Mayfield Farm

Background and aims by Jacky Nowakowski
Results of the excavation 350 words
Significance of the results by Peter Herring 500 words

Character of medieval field system at Halloon Farm

Background and aims by Jacky Nowakowski
Results of the survey 250 words
Significance of the results by Peter Herring 500 words

Investigation of ditch complex at Black Cross

Background and aims by Jacky Nowakowski
Results of the excavation 400 words
Interpretation and overall significance of the results 200 words

THE POST MEDIEVAL INDUSTRIAL LANDSCAPE

Summary of background historical and archaeological data

and assessing the character of post medieval industry
in mid Cornwall by Adam Sharpe 800 words

Investigating The Kelliers Streamworks

Background and aims by Jacky Nowakowski
Descriptive summary
Overall Interpretation and contribution of its study to an
understanding of the industrial landscape by Adam Sharpe 600 words

Investigating Queens Mine by Adam Sharpe

Background and aims
Descriptive summary
Results of mineralogical analysis of soil samples
Overall Interpretation and contribution of its study to an
understanding of the industrial landscape 1000 words

GENERAL SUMMARY relating results from
fieldwork to model for historic landuse period by period by Peter Herring
to include

- Commentary on the origin of distinctions in traditional land use in the project area by Peter Herring
with Jacky Nowakowski 1000 words

FIGURES - Site plans

1. Location plan of Deep Lane
2. Photograph of Deep Lane prior to excavation
3. Excavation plan of Deep Lane (CAU archive GRE: 165)
4. Sketch Survey plan of Ridge and Furrow at Mayfield Farm PRN:33952
5. Schematic and comparative figure of Ridge and Furrow and lazybeds?
6. Section across trench [127]
7. Sections across ditches at Black Cross
8. Locations of hedge sections recorded on the A30 project
9. Boundary types mapped
10. Medieval field boundary section 113 - earthen bank - Penhale
11. Medieval field boundary section 134 - Stone faced bank - Trewheela
12. Location plan of all features found at Black Cross
13. Sections across ditches at Black Cross
14. Pedna Carne plan of feature complex
15. Location plan of features found at Higher Fraddon Down
16. Sections through features found at Higher Fraddon Down
17. Map showing areas of medieval settlement and enclosure and showing historic landscape character (to show REL and IND etc., as well as AEL and URG).
18. Photograph of recording field boundary sections on A30 Project

19. Distribution of artefacts across the landscape zones (early medieval to post medieval) in relation to the settlement pattern.
20. Plan of streamworks and mining sites in the area
21. Survey plan of The Kelliers
22. Queen's Mine Excavation and Survey Plan
23. Sections across Queen Mine pits

FIGURES - General

1. Map showing areas of post- medieval settlement and enclosure and industrial land use
2. Selection of post- medieval hedge boundaries
3. Field boundary section 83 - Stone faced earth and stone wall - Crugoes
4. Field boundary section 131 - earthen bank - Goss Moor
5. Field boundary section HS38 - Earthen bank - Higher Fraddon

FIGURES - Artefacts

1. 3 (Early medieval grass-marked) sherds from PR93

INDIAN QUEENS - AN ENVIRONMENTAL CONTRIBUTION
by Vanessa Straker

Overall summary of the contribution of archaeobotanical and palaeo-environmental data from the project to the study of landscape history within the county to include:

ENVIRONMENTAL AND ECONOMIC DATA

Investigation and Analysis of Halloon Farm peat deposit by Vanessa Straker

Summary of fieldwork and sampling
Results of pollen analysis
Results of insect identifications by David Smith
Results of dating the sequence
Discussion and Interpretation of results **1500 words**

Dated Pollen Sequences in the Project Area

Comparison of pollen sequences from Little Gaverigan, Highgate Ritual Enclosure and Penhale Round and comparison of sequences from St. Austell barrow groups. Discussion here will include buried soils examined from GV92. Some input from Matthew Canti will be appropriate here.

1000 words

The Contribution of Charcoal Studies

Linking the results with the charcoal remains taken from sites dating from Neolithic to the Roman periods by Rowena Gale
to include -
a commentary on aspects of natural resource management from early prehistory to the Roman periods. **1000 words**

Overall Summary of Economic Practise

- A history of economic practise and farming history and land use in "anciently enclosed land" from the Neolithic to the Roman periods.
- Commentary on changing documented land use in the project area

1000 words

FIGURES - General

1. Locations of environmental samples recovered in the project area.
2. Trench [103] WB93 - Showing peat horizons at Halloon Farm.
3. Schematic diagram - Halloon Farm : Stratigraphy of monoliths and locations of samples
4. Section of GV92 showing locations of buried soils sample
5. Section through round ditches - PR93 Area 3 south - showing areas of sampled soils (GRH:178/23)
6. 4 Maps showing changing landuse and vegetation since early prehistory - early prehistory, later prehistory, medieval periods and later post medieval periods

TABLES

1. Results of pollen analysis
2. Results of insect identifications

OVERVIEW AND CONCLUSIONS by Jacky Nowakowski 5000 words

BIBLIOGRAPHY

18.8 METHODS STATEMENT

18.8.1 Outline of tasks for analysis and publications of results

Overall analyses of the data from the A30 Project covers many tasks for specific classes of data. These form a prelude to the preparation of data for publication and are summarised below.

18.8.1.2 ANALYSES OF STRUCTURAL AND STRATIGRAPHIC DATA

Basic analyses of structural and stratigraphic data on all the sites were completed during the archive and assessment stages of this project. Further work on this class of data will involve the refinement and any revision of structural phasing in particular for complex sites once radiocarbon dates and other supporting data are available. Since the aim will be to publish the results of the work on the A30 Project as a monograph the presentation of results for each investigation will be structured in a chronological narrative which embraces a landscape approach. Following summarised descriptive accounts synthetic overviews will be produced as presented in the publication outline (see above). Sites and periods have therefore been considered collectively. For how the following proposed analyses link into specific research objectives see sections 18.3, 18.4, 18.5 and 18.6. (Task number is that shown on the Gantt diagram).

18.8.1.3 MESOLITHIC LANDSCAPE

No structural data is available for this period though a synthetic account of finds from the following sites will form the basis for general commentary on the character of early

land-use in the study area. Any commentary on the types of land use for this period will by necessity be discussed in terms of the character and distribution of artefacts diagnostic of Mesolithic gatherer-hunter communities. The results here will be set into a regional overview of current knowledge for this early prehistoric period

- *Little Gaverigan Barrow*
- *Penhale Round*
- *Penhale Moor*

Summary of tasks

Task no: 42	Production of text for publication and a map. Analyses of Mesolithic material will be carried out by Alison Roberts (1 day) in liaison with Philippa Bradley and Jacky Nowakowski (1 day).
Time allocated:	2 days.

18.8.1.4 NEOLITHIC LANDSCAPE

Early to Middle Neolithic dates are anticipated for features recorded at Penhale Round (phase 2). Once confirmed, descriptive and interpretative summaries of two main structures ([6652] and [3299]) will be produced. Particular attention will be given to hearth pit [254] (within structure [3299]) which presents the best-preserved body of data for this period. Discussion of pit [254] will also centre on the character of artefact deposition within this feature and this will form a consideration of on-site behaviour and link into a discussion of "special deposits" proposed for the artefacts found in this feature (see below). This new data has considerable significance for studies of this period and its contribution will be reviewed in terms of the character of contemporary data recorded within the locality, within the county (e.g. Carn Brea) and in the country as a whole (as outlined in Darvill and Thomas 1996; Topping 1997).

- *Stratigraphic and structural data from Penhale Round will be described and discussed - Site phase 2 structures [6652] and [3299].*
- *The text will be accompanied by phase plans and sections across posthole and pit features.*

Summary of tasks

Task no: 44	Production of text for publication and summary. Jacky Nowakowski (4 days) and Henrietta Quinnell (2 days).
Time allocated:	6 days.

18.8.1.5 BEAKER ACTIVITIES

Confirmation of activities dating to the Beaker period is awaited via scientific dating. If pit [3189] discovered at Penhale Round is demonstrated to be an indication of lowland occupation for this period then a descriptive and interpretative account of the character of pit [3189] will form the focus for a discussion of land-use for this period in the project area. Some comment on the survival of the pit will also be made and this data will be compared with other documented discoveries of contemporary data in the county such as those found at Gwithian near Hayle (Megaw 1976) and Poldowrian on the Lizard (Smith

and Harris 1982). Clearly confirmation of Beaker activities at Penhale will have some relevance to the discussion of the nature of contemporary use of the upper land zones in the project area.

- *Stratigraphic and structural data from Penhale Round will be described and discussed - site phase 3 pit [3189] and isolated finds.*
- *The text will be accompanied by section and profile of pit [3198] and a site phase plan.*

Summary of tasks

Task no: 45	Production of text for publication and summary. Jacky Nowakowski.
Time allocated:	1 day.

18.8.1.6 EARLY BRONZE AGE CEREMONIAL LANDSCAPE

At this present stage of analysis the prehistoric sites discovered at Gaverigan and Highgate are considered to be contemporary and form components of a relict ceremonial landscape dating to the Early Bronze Age period. Each presents different facets of behaviour commonly linked by early prehistoric ceremony and ritual practice and in order to underline this the structural histories of the three main sites (listed below) will be presented as descriptive and interpretative narratives. Assuming that scientific dating will confirm that these sites are contemporaneous, these interpretations will be drawn together in an overall summary which examines the interdependence and dynamics represented by three different sites of the same cultural period which serve similar linked purposes. Particular emphasis on the contextual analysis of all structural data linked to artefact distribution to gain insights into on-site behaviour will be crucial to this examination. The results will be reviewed and compared with those of other selected "ritual landscapes" in the county and well as those geographically nearest such as the St. Austell barrow group (Miles 1975) and clusters of sites at nearby Innis Downs and Saffron Park (Nowakowski 1997b).

- *Stratigraphic and structural data from the following sites will be described and discussed.*

  Little Gaverigan Barrow - all phases
  Highgate Ritual Enclosure - all phases
  Highgate Pits - all phases
  WB93 Cup-marked stone (see below, stonework).

- *All texts will be accompanied by site phase plans and sections across a selection of pits and posthole features.*

Summary of tasks

Task no: 46	Production of text for publication
Task no: 47	Overall summary of Early Bronze Age data which is accompanied by a reconstruction of this landscape

Jacky Nowakowski (46 & 47 = 15 days) and Henrietta Quinnell (46 & 47 = 6 days).

Time allocated: 21 days.

18.8.1.7 MIDDLE BRONZE AGE FARMING LANDSCAPE

Activities dating to the Middle Bronze Age period found at Penhale Round and Penhale Moor provide significant insights into the character of lowland settlement for this cultural horizon. Both sites have produced well-preserved structural data - the results of which will be presented in detail for comparison with each other as well as to compare with other sites of this period found elsewhere in the county such as Trethellan Farm (Nowakowski 1991), Trevisker Round (ApSimon and Greenfield 1972) and Gwithian (Thomas 1958). Full contextual analyses of the structural data integrating other supporting data from the studies of finds, economic and environmental data will be presented for both sites. Discussion will also focus on the character of on-site formation behaviour and particular examination will be given to the processes of site abandonment and its implications for settlement studies of this period.

- *Stratigraphic and structural data from the following sites will be described and discussed.*

  Penhale Round - Site phase 4 - structures [358] and [3053] and related enclosure
  Penhale Moor - Structures [1018] and [1013] and WB94 hollow

- *The texts will be accompanied by phase plans of the Bronze Age structures and finds distributions plans. Site phase plans will also be produced.*

Summary of tasks

Task no: 48	Production of text for publication
Task no: 49	Overall summary of MBA data which is accompanied by a reconstruction of this landscape Jacky Nowakowski (48 & 49 = 12 days) and Henrietta Quinnell (49 = 3 days).
Time allocated:	15 days.

18.8.1.8 LATER BRONZE AGE AND EARLY IRON AGE LANDSCAPE

The most significant results dating to the later Bronze Age and Early Iron Age periods in the project area take the form of field systems and possible settlement occupation discovered at Penhale Round (structure [5517]). It is anticipated that these will produce similar dates by radiocarbon dating. Detailed descriptive accounts together with interpretative discussions of the character of both aspects of this data will be produced and these will be reviewed in terms of their contribution to issues of land-use, continuity and change in the project area. The early field system excavated at Halloon Farm will be discussed here although it is recognised that it may well have some contribution to earlier phases of occupation in the project area (i.e., the Middle Bronze Age landscape, see above). Comparisons of similarly dated sites in the county will generally be limited due to a dearth of well-dated sites of this period however recent work at Trenowah, St. Austell (Johns

forthcoming) and Callestick (Jones 1997) may provide some useful comparison for this important data discovered at Indian Queens.

- *Stratigraphic and structural data from the following sites will be described and discussed.*

  Penhale Round - field system site phases 5 and 6 and structure [5517]
  Halloon Farm Field System

- *The texts will be accompanied by a detailed plan of structure [5517] and site phase plans at Penhale Round. Selection of ditch profiles will also be shown. A plan of the field system at Halloon will also be published.*

Summary of tasks

Task no: 50	Production of text for publication
Task no: 51	Overall summary of data
	Jacky Nowakowski (50 & 51 = 6 days) and Henrietta Quinnell (51 = 2 days).
Time allocated:	8 days.

18.8.1.9 LATER IRON AGE LANDSCAPE ROMAN-CORNISH SETTLEMENT AND LANDSCAPE

The excavations at Penhale Round revealed a considerable wealth of well-preserved structural data of later Iron Age and Roman date which reveal much about the changing economy, social character and status of the settlement for the later prehistoric period in the study area. Full descriptive and interpretative detailed summaries of each structural phase will be produced and these will embrace all aspects of supporting data to produce a narrative which documents the changing nature of the site over a period of several generations. Particular attention will be given to the significance of changes to the ditches, the entranceway and to an analysis of on-site behaviour with a full discussion of discard behaviour (i.e. the midden [2003]). Detailed analysis of the house excavated within the interior will also take place. A full account of the field system apparently contemporary with the major structural phases of occupation within the round will also be produced. This will focus on character, survival and highlight patterns in land-usage for this period. Given the lack of comparative comprehensive excavations for both the round and the field system in the county (with the exception being Trethurgy, see Miles and Miles 1973 and Quinnell, forthcoming) it is recognised that the results here have particular relevance and singularity. Discussion will therefore focus on the particular contribution Penhale Round has made to the study of later prehistoric settlement in the county.

If scientific dating confirms Roman dates for the Black Cross oven and the pit found on Pedna Carne, then these sites will also be discussed as part of the colour of the local landscape during Roman times. It is anticipated that these sites will enlarge the picture for this period and their examination can be drawn together with the results of the field boundary recording programme in detailing matters of settlement continuity and the nature of land-use in different landscape zones.

- *Stratigraphic and structural data from the following sites will be described and discussed.*

  Penhale Round - site phases 7.1 to 7.10
  ?Black Cross Oven
  ?Pedna Carne pit [128]
  Hedge Boundaries and field systems

- *The texts will be accompanied by a series of detailed site phase plans for Penhale Round. detailed site plans of phases of structure [2045] will be published alongside selection ditch and entranceway profiles. A number of photographs showing the entranceway will be published alongside a reconstruction drawing of the site during the Roman period. Other smaller sites will be accompanied by plans and selected sections of relevant features. A selection for field boundaries will also be illustrated.*

Summary of tasks

Task no: 52	Production of text for publication and overall summary of data Jacky Nowakowski (52 = 14 days) and Henrietta Quinnell (52= 4 days).
Time allocated:	18 days

18.8.1.10 EARLY MEDIEVAL LANDSCAPE AND HIGHWAYS

Detailed accounts of structural data of all individual sites relevant to the study of the project area during the early and later medieval periods will be produced. These are listed below and although each has provided varied qualitative information, their greatest contribution will be part of a collective overview into a much broader discussion of the character of the rural settlement for the historic period in the study area. Of particular relevance here will be an overview of the spatial survival of data from these periods across landscape zones (in the form of physical remains and datable artefacts) married together with historical and place-name analyses and any early cartographic sources. Summaries of structural data from individual sites grouped together for this period will be presented as examples whose significance is emphasised by a landscape approach. Analysis of those field boundaries identified as being medieval in date is of particular relevance here and these will be discussed both in descriptive and interpretative terms.

The analysis will focus on:

- Production of analytical/interpretative map/s of medieval and post medieval settlements in the 2 parishes or a suitable block, using place-name maps and index, guided by the Tithe Map, the Ordnance Survey 1st edition as appropriate. The map(s) should show: distribution of medieval settlement, selected categories of early medieval place-names (e.g., *Tre*, *bod*, etc.,); interpreted extent of medieval heathland; post medieval development , categorising settlements by period, e.g., 17th century to 1840, 1840-1880, post 1880; road corridor also shown. Settlement patterns and their development will be described and interpreted, and in particular the road corridor will be set in context.

- Limited documentary research for medieval settlements whose fields were cut through by the road, in addition to a general description of their character (farms, hamlets, etc.,).
- Basic analyses of field patterns associated with medieval settlement: create interpretative plans for each form showing full extent of farm (road and corridor working data from Tithe Map and fieldwork); this will provide a context for discussing the results of the hedge sections.
- Analyses of field boundary sections - looking at results farm by farm, involving descriptions and interpretations of sections/boundaries related to overall field pattern and interpretation for farm including cross referencing to watching brief evidence (such as ditches and isolated finds); comparisons of medieval farms with medieval; medieval with post medieval; post medieval and post medieval (e.g. pre 1840, post 1840); Identify and describe good examples that show range and character of boundary types and their development in the study area.
- Anciently enclosed land (AEL) will be discussed in synthesis. Analysis will be needed to achieve this and should include systematic comparison of project data from 2 landscape zones; types of sites, types and numbers of features recorded during the watching brief; distribution of pottery, flint, environmental data and boundary types etc. (Task 56).
- *Stratigraphic and structural data from the following sites will be described and discussed.*

  Penhale Round - site phases 8 and 9
  Halloon Farm medieval lynchets and field system
  Deep Lane
  Mayfield ridge and furrow
  Hedge Boundaries and field systems
  ?Ditch complex at Black Cross

Historic general

*Higher Fraddon Down features**
Note: The features allocated at present to general statements may be relocated once a clearer idea of their dates and functions are achieved. The discoveries of partial sites (marked *) in the upper zones of the study area - that is in *recently enclosed land* - may provide some further comment on past land-use in this topographical zone.

Summary of tasks

Task no: 55	Historic data analysis and production of text for publication
Task no: 56	Drawing together data on medieval and post medieval finds for maps
Task no: 57& 59	Text for minor rural sites and overall summary
	Peter Herring (55 & 57 = 23 days); Jacky Nowakowski (55, 56 & 57 = 9 days) and Carl Thorpe (56 = 5 days)
Time allocated:	37 days

18.8.1.11 POST-MEDIEVAL SETTLEMENT AND INDUSTRIAL LANDSCAPE

Given the nature of the archaeological investigations - limited to sites within the road corridor - those of an industrial character formed only a small part of the investigations in the project area. Nonetheless, they make a significant contribution to an understanding of the history and distribution of settlement within the landscape. Insights into the character of industrial activities have been provided by two main sites, Queens Mine and The Kelliers streamworks, and full descriptive summaries of these will be published. The results of these investigations will be compared with and to a growing corpus of data on mining sites which now exists in the county (e.g., Gerrard's study of early mining 1986, and recent work by CAU on Bodmin Moor, forthcoming). A further significant aspect of the characterisation of the landscape during the post-medieval period will be the contribution of the field boundary study whose results will be presented here as part of this appraisal and linked into a discussion and general synthesis on the character of recently enclosed land (REL).

- *Stratigraphic and structural data from the following sites will be described and discussed.*

  Queens Mine
  The Kelliers
  Hedge Boundaries and field systems

- *Site plans and sections will accompany the text.*

Summary of tasks

Task no: 58	Industrial sites data analysis and production of text for publication Adam Sharpe (7 days); Jacky Nowakowski (3 days).
Time allocated:	10 days

18.8.1.12 ANALYSES OF ARTEFACTS

This comprises the analyses of a wide range of material data: pottery, flints, stonework, burnt clay, copper alloy objects, ironwork and coins.

18.8.1.13 PREHISTORIC CERAMICS - STUDY AND ANALYSIS by Henrietta Quinnell

Neolithic ceramics

Of the small collection of ceramics for this period, the only "closed group" was that found at Penhale Round in pit [254]. This will be described, classified and special attention will be given to the manner in which the material was deposited in this feature. Other material dating to the Neolithic period was recovered from residual contexts at Halloon Farm and Penhale Moor and these will be classified and described and incorporate supporting data from petrological and organic residue analyses. Analysis of this material from all sites will contribute to a discussion on the spatial extent of activities for this period in the project area. In addition the results of this study will be compared with contemporary ceramics collections discovered elsewhere in the county and it is anticipated will provide valuable commentary on local and regional patterns of trade and exchange.

Task no: 24 *Neolithic pottery will be discussed from the following sites:*

- *Penhale Round* 5 days
- *Penhale Moor (time included in PR93 above).*
- *Halloon Farm* 1 day

Beaker pottery
Ceramics of Beaker date were recovered from secondary contexts at Penhale Round. Study is therefore limited to description and classification incorporating the results of petrological analysis. The material will be compared with other material for this period found in the county. Some commentary on the presence of such material in non-funerary contexts will be made.

Task no: 24 *Beaker pottery will be discussed from the following site:*

- *Penhale Round (included in time for MBAge below)**

Early Bronze Age funerary vessels
Funerary vessels from Little Gaverigan Barrow and Highgate Ritual Enclosure were recovered from primary contexts. Each will be described and classified and their study will incorporate results from petrological and organic residue analyses. Material from the two sites dating to this period will be reviewed together as apart of a contextual approach to the study of these ceremonial and ritual monuments.

PROFORMA FOR VESSELS FROM THE A30 PROJECT WHICH ARE INDIVIDUALLY PUBLISHED

P		Site		Fig.N°	
Context No used in Publication					
Other relevant context No's					
SF N°(s)					

Comments on other context(s) in which pieces of vessel found
Vessel type
Parts of vessel found, including proportion if assessable
Weight
Rim type, diameter, decoration
Body form, width at girth, details of decoration
Av. wall thickness
Comments on base, diameter
Fabric
Munsell colour

Function
Comments on fragmentation, burning and sooting
Comments on freshness of breaks
Any direct companda (published or museum sources)
Date of vessel
Any other comments

Compiler		Date	

Task no: 24 *Early Bronze Age pottery will be discussed from the following sites:*

- *Little Gaverigan Barrow*
- *Highgate Ritual Enclosure* *(together)* 7 days

Middle Bronze Age "domestic" ceramics

Large and significant collections of Middle Bronze Age ceramics were excavated from primary contexts at Penhale Round and Penhale Moor. These two assemblages will be studied individually and then considered collectively. They will be described, classified and in both cases particular emphasis will focus on sherd size, vessel fragmentation and post-depositional processes which, it is anticipated, will illuminate on-site formation processes. The study of both assemblages will be enhanced by full petrological and organic residue analyses to form a comprehensive study which may usefully compare with other contemporary collections from sites such as Trethellan Farm (Nowakowski 1991), Trevisker (ApSimon and Greenfield 1972) and Callestick (Jones 1997). Particular attention will be given to the presence of anomalous fabrics and forms apparent in both assemblages and the study of vessel form and function will also form part of the overall analyses of this material. Both areas of study have relevance for site chronologies and will contribute to interpretation of the character of occupation at each of these sites.

Task no: 24 *Middle Bronze Age pottery will be discussed from the following sites:*

- *Penhale Round (*includes Beaker material)* 15 days
- *Penhale Moor* 15 days

Late Bronze Age/Early Iron Age ceramics

The general scarcity of pottery dating to this period in the south-west means that full study of those sherds from Penhale Round and (possibly) from Penhale Moor is of particular importance. Of the five distinctive vessels from Penhale Round, three are from primary contexts, which it is anticipated, will be supported by reliable scientific dates. Full study is therefore proposed which includes description, classification and discussion incorporating the results of petrological and comparative studies of other relevant groups (see section 5.3.4). Of particular importance here is the recognition of a fabric type (gabbro early variant) and its first appearance in early stratified contexts at Penhale Round. Study of the material from Penhale Moor will only be relevant if a granitic fabric identified from structure [1013] is shown to be post-Trevisker in date.

Task no: 24 *Late Bronze Age/Early Iron Age pottery will be discussed from the following sites:*

- *Penhale Round* 3 days
- *Penhale Moor* (depends on analysis of granitic material see section 6.5.2) 2 days

Late Iron Age/Roman ceramics

The largest assemblage of Late Iron Age and Roman pottery was excavated from both primary and secondary contexts at Penhale Round. Contemporary material from Penhale Moor is limited and was mainly residual but some comment on this latter group will be useful in a general discussion of the spatial extent of activities for these periods in the project area. A full descriptive and discursive study of the collection from Penhale Round will incorporate results of the petrological study together with those from organic residue analysis. Both supporting studies are particularly relevant to the study of vessel form and function and the successful results of a pilot study on residues on pottery of Roman date from this site, has already demonstrated its contribution to Roman ceramic studies in general. The full study of diagnostic Roman forms from Penhale Round is of particular importance given confirmation by petrological analysis of variants of gabbro clays used in their manufacture and this area of study will form an important part of a general discussion on contemporary patterns of trade and exchange. The importance of obtaining reliable scientific dating has been highlighted in section 5.6.4. Full contextual analyses of two "closed groups" of pottery (see section 5.6.4) will add to the general discussion and study of on-site formation processes and patterns of refuse and discard behaviour. Fragmentation processes and sherd size analysis of these two groups in particular will contribute to a general discussion of this aspect of settlement behaviour at Penhale. The assemblage as a whole has much to contribute to ceramics studies for these periods and results here will be reviewed within the context of comparative studies (see section 5.6.4).

Task no: 24 *Late Iron Age and Roman pottery will be discussed from the following sites:*

- *Penhale Round*
- *Penhale Moor (together)* 15 days

General Statement

Vessels and fabrics will be published in accordance with details set out in *The Study of Later Prehistoric Pottery Guidelines for Analysis and Publication* (Prehistoric Ceramics Research Group, Occasional paper No 2 1992) and M G Fulford and K Huddleston *The Current State of Romano-British Pottery Studies : A review for English Heritage* (English Heritage Occasional Paper no 1, 1991) and any other guidelines recommended at the time analysis takes place.

Terms for vessel type, rim type, decoration etc. will be taken from lists acceptable fir current use where these are available. Such lists will be specified. Where no relevant lists exist, full descriptions will be supplied.

Fabric types may be those currently accepted e.g. samian, BB1, gabbroic. If no recognised term exists a description using the Prehistoric Ceramic Research Group guidelines will be supplied.

The *pro forma* has been designed to cover all types of pottery proceeding the introduction of glazed wares. It may not be appropraite/possible to fill in the boxes for all categories for each vessel. It may also be decided not to publish all the detail included on the *pro forma*.

As a *pro forma* in this comprehensive form is an innovation for the Cornwall Archaeological unit, it may be found necessary to adopt it as analysis proceeds, of if constructive comments is obtained from other ceramic specialists. Reference here will be made to any vessel thin-sectioned or otherwise examined by a specialist in petrology.

NOTE: The estimates given above included some liaison time with the conservator, residue specialist, geologist, illustrator and project manager - though additional time has bee added where deemed appropriate.

18.8.1.14 EARLY MEDIEVAL CERAMICS - STUDY AND ANALYSIS by Carl Thorpe

Whilst a small group of diagnostic early medieval pottery was recovered from (residual) secondary contexts at Penhale Round, their discovery at this site does give some indication of activity continuing beyond the Roman period at this site (i.e., during the 6th to 11th centuries AD). Three sherds will be described and discussed incorporating the results of a petrological study and organic residue analysis. Petrological analysis is of particular importance here as these are grass-marked sherds and it would be interesting to determine whether there is a fabric distinction between these examples of early medieval date and those "grass-marked" sherds of Roman date and form also found at Penhale Round (see section 5.6.4).

Task no: 27 *Early medieval pottery will be discussed from the following site:*

- *Penhale Round* 2 days

18.8.1.15 MEDIEVAL AND POST-MEDIEVAL CERAMICS - Study and analysis by Carl Thorpe

No "closed groups" of medieval and post-medieval pottery from primary contexts were recovered during this project. Although collections of material of these periods were found at various locations within the road corridor and some commentary of their distribution, presence and absence may be particularly relevant to discussions of settlement and land-use for both periods. It is therefore proposed that review of all material of these periods recovered during site specific investigations and from topsoil deposits during the watching brief programme. This will result in a general synthesis and contribute towards maps which model patterns of land-use for both the medieval and post-medieval periods in the project area.

Task no: 56 *The synthesis will characterise and discuss pottery from the following sites:*

- *Gaverigan Barrow*
- *Penhale Round*
- *Penhale Moor*
- *Halloon Farm*
- *Mayfield Farm*

- *Watching Brief Finds groups A, F, H, K and HS132. These findspots were located on both anciently enclosed and recently enclosed land.*

Work to be carried out by Carl Thorpe (5 days), Jacky Nowakowski (3 days)

Time allocated: 8 days

18.8.1.16 PREHISTORIC FLINTWORK - STUDY AND ANALYSES by Philippa Bradley and Alison Roberts

General Method Statement
The flint will be examined: the records generated during the assessment will be used as a basis for all further work and enhanced where necessary. Attribute analysis will be undertaken on selected groups of material. This analysis will consist of recording selected attributes, including butt type, hammer mode, position in the reduction sequence (possibly using some of the categories described by Harding 1990, 218-220), raw material type and condition. Metrical analysis may be undertaken as part of this work. Through this analysis it is hoped to refine the dating further. Use-wear analysis will be undertaken as appropriate and the possible sources of raw materials will be explored further.

Mesolithic material
This material will be described, characterised and results will contribute to a discussion on the character of the Mesolithic landscape in the project area. Material from Penhale Round, Penhale Moor, Little Gaverigan Barrow and Halloon Farm will be discussed here (task no: 42).

Neolithic material
Pit [254] discovered at Penhale Round contained a relatively coherent "closed group" of diagnostic flintwork associated with pottery of Neolithic date. This will be examined as a primary unit of study. Neolithic material from Halloon will be characterised and contribute to the discussion on the spatial extent of activities for this period in the project area (task no: 29).

Early Bronze Age material
Some flintwork of early Bronze Age date was recovered from secondary contexts at Gaverigan Barrow. These will be described and classified (task no: 29).

Middle Bronze Age material
Collections of flintwork from Penhale Moor and Prenahle Round offer the opportunity to examine lithics in association with contemporary structures and ceramics. Full descriptive studies guided by the general statement method given above is proposed. Spatial analyses of lithics from MBA structures at both sites will compare and aid a contextual study of these landscape features. Commentary on a small collection from Mayfield Farm - despite being residual - may provide an indication on the probable extent of activities for this period in the project area (task no: 29).

The following tasks will be carried out:

- **Task no: 29** Finalise recording and spatial analysis at

  Penhale Round 3 days

- **Task no: 29** Attribute analysis of selected groups and comparison of

  material with other Bronze Age assemblages
  (e.g. Trethellan Farm, Nowakowski 1991) 3 days

- **Task no: 42.** Liaison with Alison Roberts on Mesolithic material

  (includes *Little Gaverigan, Penhale Moor, Halloon Farm* and *Penhale Round*) 2 days

- **Task no: 29** Report writing and editing - descriptive text for

  Penhale Round, Penhale Moor, Little Gaverigan, Halloon Farm, Mayfield Farm and watching brief finds

  4 days

  Philippa Bradley (12 days) and Alison Roberts (2 days)
  and Jacky Nowakowski (2 days)

Time allocated: 16 days

18.8.1.17 PREHISTORIC STONEWORK - STUDY AND ANALYSIS by Henrietta Quinnell

Stonework from Gaverigan Barrow

The stonework excavated from Gaverigan Barrow will be examined as a collective body of data which, it is anticipated, will aid an understanding of the activity and structural history of the site. A table will be prepared for this which will show the location, by quadrant, of various categories of stone found on site. Whilst no further geological study is considered necessary, the stonework will be classified and this will provide a useful comparative study for similar material found on other barrow excavations (such as the St. Austell group, see Miles 1975). This data will add further to a general discussion on the significance of quartz fragments and quartz pebbles which have been recorded on sites of funerary and ceremonial character for this period. In addition, one item in particular - a pebble hammer - will be described and illustrated.

- **Task no: 25** *Little Gaverigan Barrow* - table and descriptions 2 days

Stonework from Penhale Round

Stonework artefacts were recovered from Neolithic, Bronze Age, Iron Age and Roman contexts at Penhale Round. In total a group of 85 items have been selected for detailed study which combines classification, geological sourcing and any supporting technological analyses (such as XRF, see below). Of these, 40 items will be described and illustrated for publication.

Neolithic material
This assemblage is small and all three items were excavated from primary contexts associated with Neolithic structure [3299] and pit [254]. Their study will contribute towards a contextual study and particular attention will be given to a consideration of the deposition process recorded for pit [254] which also contained pottery and flintwork.

Bronze Age material
Descriptive summaries, illustration, geological and technological analyses are proposed for a small group of stonework items excavated from Middle Bronze Age structure [358] at Penhale Round. This study will contribute to a contextual analysis of other material from this well-preserved feature and the collection will be compared to the contemporary stonework assemblage found at Penhale Moor.

Iron Age material
Stonework items recovered from those contexts identified of Iron Age date at Penhale Round form a somewhat disparate collection which requires classification and description. Further technological study of "burnt items" recovered in the main from pit [3106] (Area 5) is recommended as this may help shed some light on the types of activities centred around this feature. Full descriptive, geological and supporting technological analyses for a selected group of these items are proposed.

Roman material
A large assemblage of stonework from primary and secondary Roman contexts were excavated at Penhale Round. Descriptive summaries, geological and technological analyses for a selected group of diagnostic items are proposed. This study will contribute to a contextual analysis as well as be compared with other similar assemblages from sites of this period in the county. A full range of the variety of objects will be described to permit an overall assessment of the likely range of activities carried out at the settlement. XRF analysis is recommended for a selection of items to determine whether metallurgical processes took place on site. Petrological examinations will contribute to a discussion of patterns of exploitation of local and distant resources. Some consideration will be made on the presence of mortar fragments and stone bowls found in midden [2003] and form part of the examination of on-site formation processes, refuse and discard behaviour.

- **Task no: 25** *Penhale Round* - descriptions and text for 40 items 10 days

Penhale Moor
The study of a small collection of stonework artefacts recovered from the Middle Bronze Age structure at Penhale Moor will be focused on a classification and technological study aimed at determining whether the objects were associated with metallurgical activities. Results here will compare with that contemporary group from Penhale Round (see above). This study will contribute to contextual analysis of the two structures at Penhale Moor and, it is anticipated, aid in a clearer understanding of the interpretation of the settlement.

- **Task no: 25** *Penhale Moor* - descriptions and text for 5 items in addition to comparison of material from Penhale Round 2 days

Halloon Farm
Although recovered from a residual context, a whetstone diagnostic of the Mesolithic period will be described and compared with stone and flintwork from Gaverigan Barrow. Consideration of the circumstances of discovery of this find will aid to a general commentary on the extent of Mesolithic activities in the project area and to this end its findspot will be added to a general map of Mesolithic artefacts recovered for mid. Cornwall (see above).

- **Task no: 25** *Halloon Farm* - WB94 "whetstone" Group I needs consideration with material from Gaverigan 0.50 day

Highgate Cup-marked slate - WB93
A slate cup-marked stone was found in the Highgate area during a watching brief in 1993. It was not found in a secure context but its presence in this general locality is of interest as such items have been recorded on Early Bronze Age barrow sites in the county such as those at Davidstow Moor (Christie 1988) or Tregulland Barrow (Ashbee 1958). This item will be described and illustrated for publication and some discussion on the significance of the find in early Bronze Age ceremonial and funerary contexts will be made.

- **Task no: 25** *Highgate* WB93 Cup-marked stone 1 day

Summary of tasks

Task no: 25 Stonework analysis by Henrietta Quinnell 15.50 days

18.8.1.18 PREHISTORIC FIRED CLAY/DAUB - STUDY AND ANALYSIS by Henrietta Quinnell
Four groups of fired clay?/daub were found in Bronze Age ([397]), Iron Age ([2615] and [3312]) and Roman ([5629]) contexts. Alongside description, the petrology of these groups will be examined in order to provide some information on the sources of clay. It is anticipated that such study may aid interpretation and classification.

- **Task no: 31** *Penhale Round* Four groups of material, study and text - 1 day

18.8.1.19 PREHISTORIC & ROMAN METALWORK - STUDY AND ANALYSES by Henrietta Quinnell, Sarnia Butcher (to be confirmed) and John Davies.

COPPER ALLOY OBJECTS

Leaded Bronze Awl SF <324>
This item was recorded from a primary context and will be described and illustrated for publication. Further semi-quantitative analysis has been recommended although given the fragility of the object advice on this will be required. Its association with a deposit of Early Bronze Age date means that it will provide a useful contribution to the study of EBA

metalwork as well as funerary behaviour. Leaded bronze items are generally rare for this period.

- **Task no: 26** *Highgate Ritual Enclosure*- Awl SF <324> description and text 1 day

Roman?/Early medieval Hand bell SF <2475>
Full description and illustration of this find is recommended. Further research for parallels may be useful in helping to clarify a date for this item.

- **Task No: 26** *Penhale Round* - descriptions and text for SF <2475>

  hand bell - Carl Thorpe 1 day

Roman coin SF <189>
Full description and photographic illustration of this find is recommended. This has already been presented in the assessment report (see section 5.3.15).

- **Task no:** 70 Description and text checked - John Davies 1 day

Penhale Moor Spearheads SF <1655> and SF <1606>
Full description and illustration for publication of these two item is recommended, Their discovery in secure primary datable contexts has particular relevance for BA metalwork studies in the south-west. Some discussion as to their condition and the character of their deposition will also form part of the general commentary contributing towards contextual analysis of all material excavated at Penhale Moor.

- **Task no: 26** *Penhale Moor* - description and text SF <1655> spearhead - description and text SF <1606>. spearhead (together)

  Some comment will be sought from specialist Stuart Needham 1 day

IRONWORK
A small selection of ironwork from Roman contexts at Penhale Round will be described and illustrated for publication. Some conservation work is required prior to study (see below). Some comment on the surprisingly small amount of ironwork recovered from contexts of this period will be made.

Task no: 26 Description and text. Henrietta Quinnell 2 days

Roman brooch - Penhale Round Brooch <2491>
Following cleaning and conservation this item will be described and illustrated for publication. Further comment of its discovery will be sought from an appropriate specialist - likely to be Sarnia Butcher.

- **Task No: 26** *Penhale Round*- description and text for brooch SF <2491> 1 day

- Full study of material by HQ and advice from Sarnia Butcher
  1 day

18.8.1.20 **MEDIEVAL METALWORK - STUDY AND ANALYSIS** by Carl Thorpe and Roger Penhallurick

Silver coin SF <5401>
This item was found in a residual context at Penhale Round. however given the general rarity of medieval coins in the county as whole a descriptive note and photograph for publication is recommended. Its discovery at Penhale Round may have some relevance to a later use of the site as a medieval fair (see section 5.2.9). A full description of this find has already been produced during this assessment and time has been allowed for any further comments (see section 5.3.17).

- **Task no: 28** *Penhale Round* - description and text for SF <5401> silver penny
  Carl Thorpe and Roger Penhallurick
  1 day

18.8.1.21 **PREHISTORIC MISCELLANEOUS - SMALL FINDS** Specialist to be appointed

Amber bead SF <4288>
The bead should be described and illustrated for publication. Although it was found in a residual context at Penhale Round its probable EBA date gives a general indication of activities of this period in this locality. If a Beaker date is obtained for pit [3189] (see above) then it may be further indication of some general activity within the lowland zone for this period. Some reference to the general scarcity and unusual context of such finds will be made in relation to other examples found in the south-west (see section 5.6.15).

- **Task no: 28** Research, description and text for Amber bead SF <4288>
  Jacky Nowakowski with comments from Stuart Needham 1 day

Summary of tasks

Task no: 26 Analysis of prehistoric metalwork
Henrietta Quinnell (3 days), Sarnia Butcher (1day) and Jacky Nowakowski (1 day)

Task no: 28 Small Finds analysis
Carl Thorpe (2 days), Roger Penhallurick (1 day), Stuart Needham (1 day), Jacky Nowakowski (1 day).

Time allocated: 10 days

18.8.1.22 TECHNOLOGICAL ANALYSES OF FINDS

18.8.1.23 CERAMICS PETROLOGY - STUDY AND ANALYSES by David Williams and Roger Taylor

Petrological study of a selection of prehistoric ceramics and fired clay/daub will be guided by specific research questions outlined (above) and in relevant sections of this report.

The initial process of selection will involve an extensive microscopic scan of the whole ceramic assemblage which will be undertaken by Roger Taylor in collaboration with Henrietta Quinnell. It is likely that 25 pieces would then be recommended for thin-sectioning in order to answer specific queries. Thin-section analysis will by carried out by David Williams and results will be fed back to Henrietta Quinnell prior to detailed study of the prehistoric ceramics.

- **Neolithic ceramics**

Penhale Round = 15 sherds
Halloon Farm = 4 sherds
Penhale Moor = 1 sherd

- **Beaker ceramics**

Penhale Round = 1 sherd

- **Early Bronze Age ceramics**

Little Gaverigan Barrow sherds SF <440> = 2/3 sherds
Highgate Ritual Enclosure sherds SF <324> = 1 sherd

- **Middle Bronze Age ceramics**

Penhale Round (includes SF <66>) = 9 sherds
Penhale Moor (includes examination of daub see section 6.5.6) = 16 sherds

- **Late Bronze Age/Early Iron Age ceramics**

Penhale Round = 4 sherds

- **Late Iron Age/Roman ceramics**

Penhale Round = 12 sherds

- **Early medieval ceramics**

Penhale Round = 3 sherds

- **Prehistoric fired clay/daub**

Penhale Round - Four groups

Summary of tasks

Task no: 18.	Henrietta Quinnell (10 days), Roger Taylor (10 days), David Williams (8 days)
Time allocated:	28 days

18.8.1.24 GEOLOGICAL IDENTIFICATIONS OF STONEWORK ITEMS by Roger Taylor BSc PhD, Geological Consultant

Geological sourcing of a selection of prehistoric stonework artefacts will be guided by specific research objectives outlined above and in relevant sections of this report. The material to be analysed has already been selected. All these will be photographed, analysed prior to detailed study by Henrietta Quinnell.

- **Specimens for geological identification and provenance**

Penhale Round 85 items
Penhale Moor 1 item

- **Specimens for geological identification, provenance and comment on possible manufacture**

Penhale Round 43 items
Penhale Moor 3 items

- **Stone artefacts for geological identification and provenance**

Penhale Round 31 items
Penhale Moor 2 items

Summary of tasks

Task no: 13.	Photograph objects	2 days
Task no: 20	Geological Sourcing by Roger Taylor at the Earth Resources Centre, University of Exeter in consultation with Henrietta Quinnell (5 days each)	10 days

Time allocated: 12 days

18.8.1.25 ORGANIC RESIDUE ANALYSIS ON CERAMICS -STUDY AND ANALYSIS by Richard Evershed and Assistant

The pilot study undertaken on a selection of ceramic material from this project has demonstrated the potential for further work on organic residue analysis. A further selection of material is proposed and those items selected have been chosen to focus on specific research questions outlined above and in relevant sections of this report. This work has direct relevance to the study of vessel form and function and will contribute significant advances in ceramic studies from the Neolithic to the early medieval periods.

The final selection of material for this analysis needs to be made but at this stage estimates for work on an assemblage of 20 sherds has been proposed.

Neolithic material

- *Penhale Round* - results are available for SF <2485> and SF <2472>. Further selection of material to be advised.

Early Bronze Age

- *Little Gaverigan Barrow* - pygmy vessel SF <438>
- *Highgate Ritual Enclosure* - results are available for SF <324>. Further selection to be advised.

Middle Bronze Age

- *Penhale Round* - results available for SF <2446>, SF <2912> and SF <196>. Further selection of material to be advised.
- *Penhale Moor* - results available for PM94 [1223]. Further selection of material to be advised.

Late Iron Age/Roman

- *Penhale Round* - results available for a selection of material from midden. Further selection to be advised.

Early medieval ceramics

- *Penhale Round.* Basal sherds SF <27> and SF <152> have been selected for analysis.

Summary of tasks

Task no: 21.	Richard Evershed (3 days) to select material in consultation with Henrietta Quinnell (5 days) and Jacky Nowakowski (2 days)	10 days
Task no: 21	Analysis and report production with assistant at Bristol University	30 days

Time allocated: 40 days

18.8.1.26 **METALWORK - TECHNOLOGICAL ANALYSES - STUDY AND ANALYSIS** to be undertaken following advice from the Ancient Monuments Laboratory, English Heritage.

OBJECTS - COPPER ALLOY

X-Ray Fluorescent Analysis

- *Penhale Moor* - SF <1655> spearhead
  - SF <1606> spearhead

OBJECTS - LEADED BRONZE

Semi-Quantitative Analysis

- *Highgate Ritual Enclosure* - awl SF <324> Note: advice will be sought from AMLab if this is appropriate as the item may be too brittle for this technique.

X-Ray Fluorescent Analysis in order to assess if any stonework objects were used in conjunction with industrial processes e.g. metallurgical activities (see research objectives set out above).

- *Penhale Round* - 22 items

Table 81 - Penhale Round -Stone selected for X-Ray Fluorescent Analysis

Object number	*Context*	*Area, context and phase*	*Box number*
SF <4342>	[250]	Area 3N - phase 2	2
-	[2017]	Area 3N - phase 7.5	3
SF <4317>	[3213]	Area 3N - (mould) - phase 7.9	5
SF <4535>	[5601]	Area 3N - phase 7.5	10
SF <4389>	[479]	Area 3S - phase 7.9	2
-	[480]	Area 3S - phase 7.8	3
SF <2442>	[2375]	Area 3S structure [358] - phase 4	5
SF <2454>	[2376]	Area 3S structure [358]- phase 4	5
SF <2455>	[2376]	Area 3S structure [358] - phase 4	4
SF <2456>	[2376]	Area 3S structure [358] - phase 4	8
SF <2489>	[2376]	Area 3S structure [358] - phase 4	4
SF <4344>	[3100]	Area 5 - topsoil	11
SF <4345>	[3110]	Area 5 - phase 5	11
SF <4340>	[3107]	Area 5 - phase 5	11
SF <4338>	[3108]	Area 5 - phase 5	11
SF <4339>	[3108]	Area 5 - phase 5	11
SF <4335>	[3110]	Area 5 - phase 5	11
SF <4363>	[3153]	Area 5 - phase 5	2
-	U/S	Area 6	4
-	[2645]	Area 6 - unphased	3
-	[3305]	Area 6 -phase 6	4

- *Penhale Moor* - 1 item SF<175> [1010] (Box 11).

<u>Clay/Baked Clay - Technological Analyses</u> - **Study and Analysis** to be undertaken with appropriate specialists.

- *Gaverigan Barrow* - study of clay in which sherd SF <440> were found. Geologist and/or soil scientist advice is required.

- *Highgate Ritual Enclosure* - examine clay [87] inside vessel SF <324>.

- *Penhale Round* - See section 5.6.13. Discussion with soil scientist about factors which inhibit survival of clay fired at low temperatures.

- *Penhale Moor* - Effect of burning on sherds (see section 6.5.4).

Miscellaneous Technological Analyses - **Study and Analysis** to be undertaken following advice from the Ancient Monuments Laboratory, English Heritage.

- *Highgate Ritual Enclosure* - study of red fibrous material from inside vessel SF <324> (see section 2.4.2.1).

- *Penhale Moor* - scanning-electron microscope to identify plant material in spearhead SF<1606> (see section 6.3.5).

Penhale Round - Advice on black finish on fine Neolithic vessels (see section 5.6.1).

Summary of tasks

Task no: 7	Plant identification in spearhead. Rowena Gale	1 day
Tasks: 17 & 19	Advice and service provided by the Ancient Monuments Laboratory, English Heritage, Fortress House, 23 Savile Row, London Jacky Nowakowski (2 days), AMLab (6 days)	8 days
Task no: 30	Liaison and feedback Henrietta Quinnell (1 day), Jacky Nowakowski (1 day)	2 days

Time allocated: 11 days

Analysis of Queen's Mine Samples to be undertaken with help from Camborne School of Mines Associates Litd., Rosemanowes, Herniss, Penyrn, Cornwall.

Proposed analysis:

- It is recommended that the soil columns and samples be examined for their mineral content and in particular in relation to the placement of any tin values within the soil profiles (Task 14).
- Recording of soil morphology to take place. Advise on this will be required. (Task 14).
- Sampling of the soil matrix at 50 mm or 100 mm intervals. XRF analysis of a representative fraction. This will cost roughly £35.00 + VAT a sample for a six mineral analysis - between 10-20 samples. (Estimates from CSM Associates November 1997) (Task 14).

- XRF analysis of representative possible tin-bearing rocks within the soil matrix. Minimum of 5 samples likely, maximum of 10. Appropriate number to be advised by competent geologist (Task 14).
- Synthesis of results and text for publication (Task 58).

Summary of tasks

Task 14	Jacky Nowakowski to organise samples to CSM and Analysis of samples and report. Liaise with Adam Sharpe 24.50 days	
Task 58	Synthesis and report for publication by Adam Sharpe	7 days

Time allocated: 31.50 days

18.8.1.27 CONSERVATION OF ARTEFACTS

Penhale Round

The following estimates are for work under the English Heritage Ancient Monuments Laboratory contract scheme for routine conservation requirements. Facilities for conservation are currently available at The Wiltshire Conservation Centre, Salisbury.

The amount of conservation materials for the recommended programme of work is minimal.

Penhale vessel sherds

Note: It is impossible to give an exact estimation of time required for the work on the vessel sherds; a reasonable approximation is given below with the proviso that any significant further time thought necessary would be notified to English Heritage or to the Highways Agency as work progressed.

Pottery sherds pit [254] SF <2485> possible carinated bowl of Neolithic date	7 days
Sherds from Bronze Age house [358] - deposit [2286] burnt sherds	7 days
Sherds from Bronze Age house [358] - deposit [2375] etc. 3 vessels	10 days
Minimal amounts of consolidation and adhesive materials are required.	
Liaison and transportation	4 days

Penhale Round Iron Objects

Conservation of the iron objects, possible referral for wood species if found, and reporting

Contexts [2003], [2012] and [2101] - 5 objects	3 days
Summary total time required for further conservation and reconstruction	31 days

Facilities for conservation are available at The Wiltshire Conservation Centre, Salisbury. The 1998/99 charge by the laboratory for developer-funded artefact conservation by the English Heritage or similar level conservator is:

Per day: 7.5 hours @£25.00 ph = £187.50 per day (ex VAT)

Estimated cost of the above programme: 31days.....£5,812.50 (+VAT)

Summary of tasks

Task no: 16	Conservation X-Ray by Salisbury Laboratory	3 days
Task no: 22	Conservation - Consolidation and reconstruction by Salisbury Laboratory	28 days
	Consultation and liaison time with Henrietta Quinnell (6 days), Jacky Nowakowski (5 days)	11 days
Task no: 32	Archive meeting Truro with Margaret Brooks, Henrietta Quinnell, Carl Thorpe, Jacky Nowakowski and Anna Tyacke (1 day each) 5 days	

Time allocated: 47 days
First estimate dated: 3.5.1996
Revised estimate: 11.11.97

18.8.1.28 Summary of Illustration requirements for the A30 project - ARTEFACTS

Table 82 Ceramic Assemblages by period

Period	Site	Number of objects
Neolithic	Penhale Round	5
Beaker	Penhale Round	1
Early Bronze Age	Little Gaverigan Barrow SF <432> and SF <438>	2
	Highgate Ritual Enclosure SF <324>	1
Middle Bronze Age	Penhale Round	9
	Penhale Moor	15
Late Bronze Age/Early Iron Age	Penhale Round	5
Late Iron Age/Romano-British	Penhale Round	35
	Penhale Moor	3
Early Medieval	Penhale Round	3
		Overall total = 79 sherds

Table 83 Prehistoric Flint artefacts - various periods

Site	Number of objects
Little Gaverigan Barrow	4 items
Penhale Round	16 items
Penhale Moor	12 items
Halloon Farm	3 items
Mayfield Farm	1 item
Watching Brief groups	2 items
-	**Overall total = 38**

Table 84 Prehistoric Stonework - various periods

Site	Number of objects
Little Gaverigan Barrow	1 item
Penhale Round	40 items
Penhale Moor	5 items
Highgate Cup-marked stone	1 item
Halloon Farm whetstone WB94 group I	1 item
	Overall total = 48 objects

Table 85 Prehistoric Metalwork - Various periods

Site	Material	Number of objects
Highgate Ritual Enclosure	*Leaded bronze*	SF <324> awl = 1 item
Penhale Round	*Copper alloy*	SF <2475> hand bell = 1 item
	Iron	6 items
Penhale Moor	*Copper alloy*	SF <1655> spearhead SF <1606> spearhead = 2 items
		Overall total = 8 objects

Table 86 Illustration for publication - prehistoric artefacts miscellaneous

Site	Description of find
Penhale Round	Amber bead SF <4288>
	Total = 1 item

Recommendations for Photographic Record of artefacts

During assessment a number of photographs were taken of artefacts for archive, research and presentation purposes. This task needs to be completed and it is recommended that that more photographs are taken of selected items for i). archive and research purposes and ii). publication purposes. The list below may be added to during analysis but for the moment gives some idea of the scope of this task. This task will be carried out in house at CAU.

- Diagnostic Mesolithic flint from Penhale Round and Penhale Moor.
- Neolithic ceramics from Penhale Round.
- Stonework (22 items) from Penhale Road need to be taken prior to XRF analysis.
- Ironwork - some items need to be selected from Penhale Round after conservation (see section 5.6.12).
- Silver coin - SF <5401> - from Penhale Round.
- Metal awl from Highgate Ritual Enclosure - SF <324>.
- Copper Alloy hand bell from Penhale Round - SF <2475>.
- Copper Alloy coin from Penhale Round - SF <189>.
- Amber bead - SF <4288> - from Penhale Round
- Spearheads - SF <1655> and SF <1606> - from Penhale Moor.
- Cup-marked stone WB93 HS55 [200] <328>

Summary of tasks

Task no: 13	Photography at CAU - Jacky Nowakowski (0.5 day), Adam Sharpe (2 days)	2.5 days
Task no: 61	Illustration requirements - site plans. Rosemary Robertson (9 days), Jacky Nowakowski (5 days), Peter Herring (3 days), Adam Sharpe (2 days)	19 days
Task no: 62	Illustration requirements - artefacts. Rosemary Robertson (9 days), Jacky Nowakowski (8 days), Henrietta Quinnell (5 days), Carl Thorpe (0.5 day), Pippa Bradley (1 day) and Alison Roberts (1 day)	24.50 days
Task no: 64	Site plans production and amendments as necessary. Rosemary Robertson	108 days
Task no: 65	Artefact illustrations amendments and layout. Rosemary Robertson (57.50), Henrietta Quinnell (5 days)	62.50 days
Task no: 63	Final selection and production of photographs for publication	5 days
Task no: 66	Reconstruction figures. Rosemary Robertson (costed as single artwork pieces). Liaison time with Jacky Nowakowski (5 days)	5 days+

Time allocated: 226.50 days

18.8.1.29 ENVIRONMENTAL ANALYSES

POLLEN - **A30 Fraddon - Indian Queens Bypass Project: recommendations and cost estimates for full analysis** by Vanessa Straker and James Greig

Introduction

The recommendations made are based on the findings of the Assessments for potential of pollen analysis by J. Huntley and J.Greig, presented in full elsewhere in this report.

Note: The estimates presented in this section (except for the Halloon pollen and insects) are those for James Greig who will do the work if Vanessa Straker is not available. These estimates are dated 8.12.97.

1 Little Gaverigan

Cremation CR9/432

The count should be enlarged to a full count (c. 500 TLP, including spores).

Ditch

The 6 assessment counts (at 10cm intervals) should be enlarged to full counts and 5 new samples should be taken from between these samples, so that the ditch pollen spectrum is based on samples at 5cm intervals. This should allow closer examination of the nature of the rises and falls in the levels of woodland/scrub and open ground taxa apparent from the Assessment.

Bank

The 13 assessment counts should be enlarged and further samples should be taken at 30, 34, 38, 40 and 44 cm, to detect the position of the land surface buried beneath the mound. There will need to be collaboration with M.Canti (soil micromorphology) to integrate the results of the pollen and soil analyses.

Estimate

	Time (days)	Costs (£)
New preparations: (10)	1	200.00
Full new counts (10)	5	1000.00
Addition to assessment counts (20)	6.7	1340.00
Report	5	1000.00
subtotal		3540.00
Equipment/chemicals		27.00
Total		3567.00

2 Highgate Ritual Enclosure

As with Little Gaverigan, pollen preservation was good, and it is recommended that a full count is obtained on each of the seven samples.

Estimate

	Time (days)	Costs (£)
Addition to assessment counts	2.5	500
Report	1	200

	Total	700

3 **Penhale Moor**

No further work is recommended.

4 **Penhale Round**

Hedge 2 (buried soil)

The soil is c. 20 cm thick and two samples were assessed. It is suggested that these should be taken to full analysis and two additional samples prepared and analysed.

Area 1a linear feature [2855]

Three of the six available samples were assessed. These should be taken to full analysis and the additional (intervening) samples prepared and analysed.

Estimates

	Time (days)	**Costs (£)**
New preparations: (5)	0.5	100.00
Full new counts (5)	2.5	500.00
Addition to assessment counts (5)	1.7	340.00
Report	2	400.00
subtotal		1340.00
Equipment/chemicals		13.50
Total		1353.50

5 **Kelliers**

No further work is recommended.

6 **Halloon**

Pollen was assessed from two sequences, and plant macrofossils from two bulk samples, one [1044] from below one of the pollen sequences [1045/1043]. Preservation was good in all samples, providing the potential to provide an environmental setting for the ritual and settlement sites in the area.

It is suggested that further analysis be concentrated on sequence 1045/1043, and that radiocarbon dates be obtained from it.

Monolith 1041

No further work is suggested.

Monoliths 1053/1043

Dating: radiocarbon dates should be obtained from:

a) 10-11 cm (measured from the top of the monolith tin), which is the top of context [96];

b) the lowest level suitable - context [100] if possible;

c) provision should be made for up to three extra radiocarbon dates, the levels to be decided after an outline pollen diagram is complete. If the dates from the top and base of the sequence show that the deposits accumulated fast, the extra dates may not be required.

Note costs for Halloon Farm are for Vanessa Straker

Estimates

	Cost (£)
5 radiocarbon dates; time (sampling, submission) 1 day	162.48
Total	**£162.48 + VAT**

Further analysis:

Pollen
21 samples at an interval of 4cm should be analysed. The assessment report makes clear that the preparations are not ideal (clumping, etc.), so the monoliths should be sub-sampled again and further preparations made.

Plant macrofossils
Bulk sample 1044 should be analysed in detail and provision made for the analysis of insects. Analysis of insects should stop at assessment level if full analysis can not be justified
In addition, 6 small samples (one from each context) should be analysed from the monolith sequence, when it is clear that all the material needed for the pollen analysis and radiocarbon dating has been removed. This will provide a local environmental context for the wetland and facilitate the interpretation of the locally and regionally derived pollen in the assemblage. It is acknowledged that the samples size may not be ideal, and so a pragmatic approach is advised. Analysis should stop at assessment level if full analysis can not be justified.

Estimates

	Time (days)		Costs (£)
Pollen			
New preparations: (21)	2	@£162.48	324.96
Full counts (21)	10.5		1706.04
Report	3.5		568.68
subtotal			2599.68
Equipment/chemicals			56.70
Total			**£2,655.38**
Plant macrofossils			
Processing of sample [1044] inc. paraffin flotation to remove insects (technician)	0.25	@£90.64	22.66
Sampling and processing of 6 samples from [1045]/[1043]; sorting of these + [1044] (tech)	4		362.56
Analysis (7 samples; specialist)	3.5		568.68
Report	2		324.96
subtotal			1278.86
Equipment (tubes etc.)			15.00
Total			**£1,293.86**

Note: Estimate for work on insects is for David Smith

Insects [sample 1044]		
Analysis and report by David Smith	3 @£154.50	463.50
equipment		10.00
Total		**£473.50**

Summary of tasks

Task no: 35 Pollen analysis. Undertaken by Vanessa Straker (44), or Vanessa Straker (16)and James Greig (28) 44 days

Task no: 36 Insects analysis to be carried out by David Smith 3 days

Time allocated: 47 days

18.8.1.30 **CHARRED PLANT MACROFOSSILS - Estimates for full analysis:** by Vanessa Straker

1 PENHALE ROUND

1.1 *Plant macrofossils (excluding charcoal)*

Number of samples: 88. The floats are of varying sizes and some may be much quicker to sort than others.

	Time	Cost (£)
Sorting (technician)	30 days @ £90.64 day	2719.20
Analysis (specialist)	23 days @ £162.48 day	3737.04
Report (specialist)	5 days @ £162.48 day	812.40
Subtotal		7268.64
Equipment (glass tubes etc.)		100.00
Total		**£7368.64**

1.2 *All samples sorted for charcoal identification prior to radiocarbon dating*

	Time	Cost (£)
Supervision	5 days @ £162.48 day	812.40

2 PENHALE MOOR

2.1

	Time	Cost (£)
Sorting (technician)	2 days @ £90.64 day	181.28
Analysis (specialist)	2 days @ £162.48 day	324.96
Report (specialist)	1 day @£162.48 day	162.48
Subtotal		668.72
Equipment (glass tubes etc.)		5.00
Total		**£673.72**

3 LITTLE GAVERIGAN

3.1 *Barrow*

	Time	Cost (£)
Sorting (technician)	3.5 days @ £90.64 day	317.24
Analysis (specialist)	2 days @ £162.48 day	324.96
Report (specialist)	1 day @ £162.48 day	162.48
Subtotal		804.68
Equipment (glass tubes etc.)		10.00
Total		**£814.68**

3.2 Ditch (waterlogged plant macrofossils and charcoal fragments)

	Time	Cost (£)
Sorting (technician)	1 day @£90.64 day	90.64
Analysis(inc. charcoal id, specialist)	2 days @ £162.48 day	324.96
Report (specialist)	1 day @ £162.48 day	162.48
Subtotal		578.08
Equipment (glass tubes etc.)		5.00
Total		**£583.08**

4. HIGHGATE PITS*

	Time	Cost (£)
Sorting (technician)	2 days @ £90.64 day	181.28
Identification of macrofossils and charcoal for AMS dating from 7 small samples; writing of report	3 days @ £162.48 day	487.44
Equipment (glass tubes etc.)		5.00
Total		**£673.72**

*This estimate could be reduced depending on how many radiocarbon dates are required.

5. WATCHING BRIEF

5.1 *Black Cross Oven*

	Time	Cost (£)
Sorting (technician)	2 days @£90.64 day	181.28
Analysis and report	2 days @ £162.48 day	324.96
Charcoal identification and report	1 day @£162.48day	162.48
Total		**£668.72**

5.2 *Pedna Carne*

	Time	Cost (£)
Sorting (technician)	0.5 day @£90.64 day	45.32
Analysis and report	1 day @ £162.48 day	162.48
Charcoal identification	1 day @ £162.48 day	162.48
Equipment (tubes etc. Black Cross Oven & Pedna Carne)		15.00
Total		**£385.28**

7. RADIOCARBON DATING

	Time	Cost (£)
Sample submission / co-ordination	10 days @ £162.48 day	1624.80
	5 days @ £90.64 day	453.20
Postage		100.00
	Total	£2178.00

18.8.1.31 SOILS- A30 Fraddon - Indian Queens Bypass: recommendations for analysis by Matthew Canti and Jenni Heathcote

LITTLE GAVERIGAN BARROW

Proposed analysis

- The samples have been impregnated but no scanning has yet been carried out. When ready, the slides will be examined to try and determine the extent of disturbance and/or erosion of the buried soil and the precise level of the old ground surface. The results will be communicated to James Greig and Vanessa Straker as soon as they are available so that pollen analysis can take account of any stratigraphic abnormalities (tasks 35 & 38).
- To date the samples have all been impregnated (V. Straker, *pers. comm.* 26th April 1997) but at the time of writing it was considered not appropriate to look at the thin sections during this phase of work *although it is recommended that further analysis of this data takes place during the next stage of work* (tasks 35 & 38).

Vanessa Straker adds*: It is important that the sections are examined as they provide useful information on soils and would contribute to interpretation of the pollen from the mound. Very fine sampling for pollen, combined with feedback from micromophological analysis might permit detail about the stacking and cutting of the turves. Since the pollen assessment did not detect a buried soil layer as distinct from the mound, this sort of more detailed line of analysis may permit this level of information to be gained* (correspondence 26.4.97).

NB There are no soil analysis recommendations from samples taken from Penhale Round proposals directly relevant to the specific research objectives of this project. However a future research objective has been identified which could be costed as this programme of work or could be carried out as part of an independent research programme (see section 5.7.6).

Summary of tasks

Task no: 38 Soils analysis and report. Jenni Heathcote (6 days), Matthew Canti (2 days) 8 days

Time allocated: 180 days

18.8.1.32 **CHARCOAL ANALYSIS A30 Fraddon - Indian Queens Bypass Project: recommendations and cost estimates for full analysis** by Vanessa Straker and Rowena Gale *Report dated 14.10.97*

Charcoal identification will provide important data on the choice of wood used for construction and fuel by communities living in the area from the Early Neolithic to the late Roman periods. It is very unusual to have the opportunity to study woodland use in a landscape over such an extensive time period and as well as contributing information on the use of wood for different purposes, the results will also be compared with what is known about the vegetation history of the area. Pollen assessment data is available principally from Little Gaverigan, Penhale Round and Halloon, but the lack of data peat deposits means that as a complete sequence covering the area is unlikely to be forthcoming, the additional data from the charcoal analysis, albeit only representing part of the vegetation community, will be especially valuable.

Summary of tasks

Task no: 6	Vanessa Straker (5 days). Technician time (45.25 days)	50.25 days
Task no: 7	Charcoal preparation and analysis. Rowena Gale	35.25 days
Task no: 8	Scientific forms filled in for dating. Jacky Nowakowski (15 days), Technician (5 days), Vanessa Straker (10 days)	30 days
Task no: 37	Macroplant remains analysis by Vanessa Straker (50.50 days)	50.50 days
Task no: 39	Liaison time and feedback of results. Jacky Nowakowski (8 days)	8 days
Task no: 53	Environmental summaries - Vanessa Straker (4 days) and Rowena Gale (2 days)	6 days

Time allocated: 180 days

Table 87 A30 Project: Costed summary of recommendations for charcoal identifications

Site	Period	Type of context	1-10 frags	11-50 frags	>50 frags	Total no. of samples to be identified	% samples assessed suitable for identification	Cost £ (Report + Identification)
Little Gaverigan	Early Bronze Age	pits, ditches, ditch recut, mound	5	12	1	18	17	442.50 [3.7 days] (300 + 142.5)
Highgate Ritual Enclosure	? Early Bronze Age	slots, ditch segments, cremations, pits	9	4	1	14	78	352.50 [2.9 days] (240 + 112.5)
Highgate Pits	? Early Bronze Age	pits	4	7	-	11	78	322.5 [2.7 days] (240 + 82.5)
Penhale Moor	Middle Bronze Age	gully, hearth, pits	12	2	11	25	55	570 [4.75 days] (300 + 270)
Penhale Round	Neolithic	pits, post holes	4	2	1	7	54	
	Bronze Age	ditch, structural spreads, post holes, stake holes	7	6	1	27		
	Late Bronze Age/ Early Iron Age	ditch, post holes, pits	6	2	7	15		
	Middle-Late Iron Age	hearth, ditches	6	2	4	12		
	Late Iron Age / Early Roman	post hole, ditch	3	0	7	10		
	Roman	post hole, stake hole, ditch	-	2	5	7	22	
	Late Roman	pits, postholes, hearths, structural spreads	-	3	19	22	23	
Penhale Round totals			26	17	57	100	-	1897.5 [15.8 days] (720 + 1177.5)
Black Cross Oven	Roman or later	oven pits	-	-	2	2	100	WB sites combined
Pedna Carne	? prehistoric	pit	-	-	1	1	100	285 (240+ 45) [2.4 days]
Project overview								360 [3 days]
Project meeting 1 day + travel [150 miles]								£159.15 (120 + 39.15)
TOTAL								**£4389.15 [36.25 days + travel)**

18.8.1.33 **Radiocarbon dating requirements** by Jacky Nowakowski

The following summaries list the radiocarbon dating requirements for individual sites.

LITTLE GAVERIGAN BARROW - EBA

- Phase 1 - pre-barrow activities = 2 dates
- Phase 2 - barrow ditch = 1 date
- Phase 3 - pits and ceramics = 3 dates
- Phase 4 - Ditch infill and close down = 1 date **Total = 7 dates**

All dates for Little Gaverigan Barrow will have to be AMS dates.

HIGHGATE RITUAL ENCLOSURE - EBA

- Central pit [6] = 1 date
- Inner ring posthole [91] = 1 date
- Outer ring posthole [83] = 1 date **Total = 3 dates**

All dates for Highgate Ritual Enclosure will have to be AMS dates.

HIGHGATE PITS - EBA

All dates for Highgate Ritual Pits will have to be AMS dates.

- **Pit [1]** = 1 date
- **Pit [4]** "turf" = 1 date
- **Pit [8]** "turf" = 1 date
- **Pit [13]** Abandonment = 1 date
- **Pit [78]** Abandonment = 1 date **Total = 5 dates**

All dates for Highgate Ritual Pits will have to be AMS dates.

PENHALE ROUND - NEOLITHIC PHASE 2

- **Pit [254]** = 2 dates
- **Structure [3299]** = 1 date
- **Structure [6652]** = 1 date **Total = 4 dates**

All dates for the Neolithic phase at Penhale Round will have to be AMS dates.

PENHALE ROUND - BEAKER PHASE 3

- **Pit [3189]** = 1 date **Total = 1 date**

This date for the possible Beaker/Early Bronze Age phase at Penhale Round will have to be an AMS date.

PENHALE ROUND - MIDDLE BRONZE AGE - PHASE 4

- **Structure [358]**

Primary Phase Structure [358] = 2 dates (2 x AMS date)
End of primary phase = 1 date (1 x AMS date)
Secondary phase structure [358] = 1 date (1x AMS date)
Third phase = 1 date (1x AMS date)
Abandonment phase = 1 date (1 x AMS date) Total = 6 dates

Contemporary landscape features

- **Pit [350]** = 1 date (1 x AMS date) Total = 1 date
- **Structure [3053]** = 1 date (1 x standard date) Total = 1 date

Overall Total = 8 dates

With one exception all dates for the Middle Bronze Age phase at Penhale Round will have to be AMS dates.

PENHALE ROUND - LATE BRONZE AGE/EARLY IRON AGE PHASE 5

- **Pit [3106]** = 1 date (1 x AMS date) Total = 1 date
- **Other features - various** = 1 date (1 x AMS/ Standard date) Total = 1 date

Overall Total = 2 dates

Dates required for the late Bronze Age/Early Iron Age phase at Penhale Round are likely to be AMS dates.

PENHALE ROUND - MIDDLE-LATE IRON AGE PHASE 6

- **Structure [5517]** = 2 dates (2 x AMS dates) Total = 2 dates
- **Hearth [3305]** = 1 date (1 x AMS date) Total = 1 date

Overall Total = 3 dates

With one exception all dates for the Middle - Late Iron Age phase at Penhale Round will have to be AMS dates.

PENHALE ROUND - EARLIEST PHASES OF SETTLEMENT PHASES 7.1 TO 7.7

- **Ditch [300]** = 1 date (prob. AMS date)
- **Ditch [5575]** = 1 date (prob. AMS date)
- **Postholes in rampart** = 1 date (1 x standard date)

Total = 3 dates

The dates required for this phase are likely to be AMS dates although one may be a standard date.

PENHALE ROUND - DATING THE FIELD SYSTEM PHASES 7.1-7.4

Ditch recut [3004] area 7 = sample [4001] = 1 date (1 x AMS date) Total = 1 date

PENHALE ROUND - LATEST PHASES OF SETTLEMENT PHASES 7.8 TO 7.10

- **Hearth pit [5026/5028]** = 1 date (1 x ?standard date) Total = 1 date
- **Hollow [5022]** = 1 date (1 x AMS date) Total = 1 date
- **Structure [5045/2045]**

Phase 1 structure [5045/2045] (hearth) = 2 dates (AMS dates)
Structure [5045/2045] phase 2 = 1 date (AMS date) Total = 3 dates

- **Hearth pit [5026/5028] SWEB 1** = 1 date

(1 x standard date) Total = 1 date

- **Midden [2005]** = 1 date (1 x AMS dates) Total = 1 date

PENHALE ROUND - DATING THE CERAMICS

- Accelerator date on soot from D cordon-ware = 1 date
- AMS date on soot on sherd in [2332] = 1 date
- **Ditch [413]**. AMS on soot on sherd from [2275] = 1 date Total = 3 dates

Overall Total = 10 dates

Almost all the dates for the later phases of occupation at Penhale Round will have to be AMS dates.

PENHALE MOOR - MIDDLE BRONZE AGE - PHASE 3

- **Structure [1013]**

Occupation of structure [1013] primary phase = 2 dates (2 x AMS dates)
Phase 2 in [1013] = 1 date (1 x AMS date)
Abandonment of [1013] = 1 date (1 x AMS date)
Pit [1155] in [1013] = 1 date (1 x AMS date) Total = 5 dates

- **Structure [1018]**

Pre-occupation phase = 1 date (1 x AMS date)
Secondary phase = 1 date (1 x AMS date)
Abandonment = 1 date (1 x AMS date) Total = 3 dates

- **Hearth pit** at Penhale Moor = 1 date Total = 1 date

Overall total = 9 dates

All dates required from Middle Bronze Age contexts at Penhale Moor are likely to be AMS dates.

HALLOON PEAT SEQUENCE

A number of radiocarbon dates are required to date the pollen sequence
Monolith [1053/1043] = 5 dates **Total = 5 dates**

WATCHING BRIEF SITES

- **Black Cross Oven [108]** - Possible Roman site = 2 dates (2 x AMS dates)

- **Pedna Carne pit [128]** - possible prehistoric site = 1 date (1 x AMS dates)

Total = 3 dates

Table 88 Summary of Dating requirements for landscape phases on the A30 project

Costs of dates given are those provided by Scottish Universities Research & Reactor Centre, East Kilbride, Glasgow G75 0QU AMS dates @ £250 + VAT (1997). Estimate dated: 15.12.97.

Period	Site	Total Number of Dates
Neolithic Phase	Penhale Round -phase 2	4 dates
Beaker/Early Bronze Age	Penhale Round- phase 3	1 date
Early Bronze Age	Little Gaverigan Barrow	7 dates
	Highgate Ritual Enclosure	3 dates
	Highgate Pits	5 dates
Middle Bronze Age	Penhale Round - phase 4	8 dates
	Penhale Moor - phase 3	9 dates
Late Bronze Age/Early Iron Age	Penhale Round - phase 5	2 dates
Middle/late Iron Age	Penhale Round - phase 6	3 dates

Iron Age/Romano-British	Penhale Round - phases 7.1.to 7.7	4 dates
Romano-British	Penhale Round - phases 7.8 to 7.10	10 dates
	?Black Cross Oven	2 dates
Unknown periods	Halloon Farm - peat sequence	5 dates
	Pedna Carne - ?prehistoric	1 date
		Overall Total = 64 dates

Summary of tasks

Task no: 6	- see above	45.25 days
Task no: 10	Revised dating strategies after charcoal sort. Jacky Nowakowski (3 days)	
Task no: 8	Scientific forms filled in for dating. Jacky Nowakowski (15 days), Technician (5 days), Vanessa Straker (10 days)	30 days
Task no: 8	Radiocarbon dating	3 months
	Revised phasing as necessary after dates are received. Jacky Nowakowski (8 days), Henrietta Quinnell (2 days), Project Referee (2 days).	12 days

Time allocated: 147.25 days

Table 89 A30 project: summary of estimates for full archaeobotanical analysis

Site	Technician		Specialist		Equipment
	Days	Estimate (£)	Days	Estimate (£)	(£)
Plant macrofossils					
Little Gaverigan	4.5	407.88	6	974.88	15
Highgate Pits	2	181.28	3	487.44	5
Penhale Moor	2	181.28	3	487.44	5
Penhale Round	30	2719.2	28	4549.44	100
Black Cross Oven	2	181.28	3	487.44	7.5
Pedna Carne	0.5	45.32	2	324.96	7.5
Halloon	4.25	385.22	5.5	893.64	15
Dating co-ordination / submission	5	453.2	10	2078	100 postage
Supervision for sorting samples for identification	-	-	5	812.4	-
Pollen					
Little Gaverigan	-	-	17.7	**VS costs: 2875.89 JG costs: 3550	27
Halloon	-	-	16	2599.68 (VS only)	56.7
Highgate Ritual Enclosure	-	-	3.5	**VS costs: 568.68 JG costs: 700	-
Penhale Round	-	-	6.7	**VS costs: 1088.61 JG costs: 1350	13.5
Insects					
Halloon	-	-	3	463.5	10
Sub-totals	**50.25**	**4,554.66**	**112.4**	**ESTIMATE 1 £22,809.72 ESTIMATE 2 £23,860.28**	**362.2**

Total	50.25 days	Techn £4,554.66	112.4 days (=50.50 days + 44 + 15 =3)	**Either ESTIMATE 1 £22,809.72 ESTIMATE 2 £23,860.28**	**£362.20**

***NB* Costs for pollen analysis for sites Little Gaverigan, Highgate Ritual Enclosure and Penhale Round are given for VS and JG. The overall cost will depend on who is available to do the work in the project schedule once the project starts. Estimates from Vanessa Straker are dated: 20.11.97 and those from James Greig are dated 8.12.97. They are explained below.

ESTIMATE 1

TECHNICAL SUPPORT

Charcoal samples @ £90.64 a day = 50.25 days = £4,554.66

VANESSA STRAKER

Pollen and macroplant fossils analysis and supervision @£162.48 a day = 109.50 days = £17,791.56

DAVID SMITH

Insects analysis @ £154. 50 a day = 3 days =£463.50

Equipment =£362.20

£23, 171.92

ESTIMATE 2

TECHNICAL SUPPORT

Charcoal samples @ £90.64 a day = 50.25 days = £4,554.66

VANESSA STRAKER

Pollen and macroplant fossils analysis and supervision @£162.48 a day = 81.50 days = £13,242.12

JAMES GREIG

Pollen analysis @ £200 a day = 28 days =£5,600.00

DAVID SMITH

Insects analysis @ £154. 50 a day = 3 days =£463.50

Equipment =£362.20

£24,222.48

18.9 RESOURCES AND PROGRAMMING

18.9.1 Project Management - Monitoring mechanisms

The project will be managed by the Project Manager at CAU - Senior Archaeologist, Jacqueline A Nowakowski. The post-excavation team will be informed regularly of progress by way of project meetings, correspondence and telephone contact. The Project Manager will co-ordinate the work and be responsible for relaying feedback on data as it becomes available. It is intended that once the project gets approval for funding a briefing meeting for the entire project team will be held in Bristol (this being the nearest centre for most team members). Another major team meeting will take place during stage 9 after

circulation of the first draft for publication. Suggested overall monitoring meetings are shown on task table 90.

A project referee will be appointed once the project gets underway. The referee's roles will be to preside over the progress of the project, give advice on the attainment of the project's aims and objectives and to guide the academic progress of the work. The referee will be required to comment on strategic decisions such as revisions to a scientific dating programme (as necessary) and the content and quality of draft versions of the final publication.

18.9.2 Members of the post excavation team.

Throughout the course of the post excavation programme the progress of the project will be monitored by Peter Rose, the Principal Archaeologist at the Cornwall Archaeological Unit who will also be at hand to give guidance, advice and monitor progress.

During analysis and writing up towards publication the project team will consist of the following:

Overall project supervision
Peter Rose BA *Principle Archaeologist - Cornwall Archaeological Unit*
The Planning Directorate, The Kennall Building, Old County Hall,
Station Road, Truro, Cornwall TR1 3AY

Project Referee - to be appointed once assessment is accepted.

Project Manager - Main Author
Jacqueline A Nowakowski BA MIFA *Senior Archaeologist - Cornwall Archaeological Unit,*
The Planning Directorate, The Kennall Building, Old County Hall,
Station Road, Truro, Cornwall TR1 3AY

Contributing authors - Landscape archaeologists
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Adam Sharpe BA MIFA *Senior Archaeologist - Cornwall Archaeological Unit,*
Planning Directorate, The Kennall Building, Old County Hall, Station Road,
Truro, Cornwall TR1 3AY

Artefact Specialists
Henrietta Quinnell BA FSA MIFA- *Freelance Archaeological Consultant*
9 Thornton Hill, Exeter, Devon EX4 4NN

Philippa Bradley BA MPhil AIFA - *Freelance Lithics Specialist,*
9 Thornton Hill, Exeter, Devon EX4 4NN

Dr. Alison Roberts - *Curator and Lithics Specialist*
Dept of Antiquities,
The University of Oxford,
Ashmolean Museum, Oxford OX1 2PH

Roger Taylor BSc PhD - *Freelance Geological Consultant,*
49 Clyst Valley Road, Clyst St Mary, Exeter, Devon EX5 1DD

Carl Thorpe BSc - *Archaeological Finds Specialist , Cornwall Archaeological Unit,*
The Planning Directorate, The Kennall Building, Old County Hall, Station Road, Truro, Cornwall TR1 3AY

David Williams - *HBMC(E) Ceramic and Lithic Petrology Project,*
Dept of Archaeology, University of Southampton

Conservator
Margaret Brooks -*English Heritage, Contract Conservator,*
The Wiltshire Conservation Centre,
Salisbury, Wiltshire SP1 2EN.

Environmental Specialists
Matthew Canti -*Soil Scientist,*
Ancient Monuments Laboratory, English Heritage,
Fortress House, 23 Savile Row, London W1X 1AB

To be appointed to work with Richard Evershed - *Research Assistant,*
Organic Geochemistry Unit, School of Chemistry,
University of Bristol, Cantock's Close, Bristol BS8 1TS

Dr. Richard Evershed - *Geochemist*
Organic Geochemistry Unit, School of Chemistry,
University of Bristol, Cantock's Close, Bristol BS8 1TS

Rowena Gale - *Wood Anatomist*
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Andover,
Hampshire SP11 9EB

Dr. James Greig - *Archaeobotanist,*
Dept of Ancient History & Archaeology, Birmingham University,
Edgbaston, Birmingham B15 2TT

Jenni Heathcote - *Soils scientist*
Environmental Officer A30 project 1992-1994
Temporary Address at Ancient Monuments Laboratory, English Heritage,
Fortress House, 23 Savile Row, London W1X 1AB

Simon Mays *Human Bone specialist,*
Ancient Monuments Laboratory, English Heritage,
Fortress House, 23 Savile Row, London W1X 1AB

Vanessa Straker BSc MSc- *Research Associate in Environmental Archaeology,*
English Heritage Southern team, Dept of Geography, University of Bristol BS8 1SS

To be appointed to work with Vanessa Straker - *Technician,*
Dept of Geography, University of Bristol BS8 1SS

Archaeological Illustrator
Rosemary Robertson,
Design for Archaeology,
Wheal Daniel Cottage,
North Hill, Chacewater Truro, Cornwall TR4 8NW

The following specialists have already commented on various aspects of the data and their contributions to the assessment will be summarised and published as appropriate:

Dr. John Davies -*Numismatic Consultant,*
16 Mount Pleasant, Norwich, Norfolk NR2 2DG

Dr. Stuart Needham - *Bronze Age metalwork specialist*
Dept of Prehistoric and Romano-British Antiquities,
The British Museum, London

Roger Penhallurick - *Curator,*
The Royal Cornwall Museum,
River Street, Truro TR 1 2SJ

Dale Serjeantson - *Research Fellow, Faunal Remains Unit,*
Dept of Archaeology, University of Southampton, Highfield, Southampton S017 1BJ

Dr. David Starley - *Archaeological metallurgist*
Ancient Monuments Laboratory, English Heritage, Fortress House,
23 Savile Row, London W1X 1AB

18.9.3 Timetable

The analysis and report writing phases of this project have been timetabled to start in October 1998 and the resources required for this work have been priced at 1998-1999 rates. Table 91 shows the timing and length of each task and the proposed management of this project over a period of several financial years.

The following table (90) outlines all tasks which form part of progressive stages from 1998 to 2002. Each stage comprises a number of tasks and the outline costs for each stage have been presented in tables 93 and 94.

Table 90 List of tasks and resources

Stage	Task No:	Task Description	Methods Section	Aims	Staff	Days
1	1	**Revisions to Assessment**		Adjustments to resources as necessary	JAN	5
	2	* **PROJECT MILESTONE** Project briefing		Organise initial team meeting	JAN	1
	3	Appoint referee		Supervise the academic progress of the project	JAN	1
	4	Team meeting in Bristol ***PROJECT MILESTONE & MONITORING POINT**		Overall agreement of project objectives and timetable	JAN PGR PCH AS HQ CT DW RE JG & or VS VS SM MB RT AR PB MC JH DS RG RR Referee	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
2	5	**DATING PROGRAMME**	18.8.1.33	LRA1-4; RRP1-6; L3		
	6	Sorting samples for analysis and charcoal samples	18.8.1.32	RRP15; T7	Tech VS	45.25 5
	7	Charcoal analysis and preparation and plant material in spearhead	18.8.1.32	RRP15;T7	RG	36.25

	8	Scientific forms and dates submitted.			Tech JAN VS	5 15 10
	9	**Dates available**				
	10	Revised dating strategies as necessary			JAN	3
	11	Adjust phasing and revised publication outline MONITORING MEETING			Ref JAN HG JAN Ref	3 8 2 1 1
3	12	TECHNOLOGICAL ANALYSES	18.8.1.22			
	13	Photograph finds - particularly stonework	18.8.1.28	Aid in analysis	JAN AS	0.50 2
	14	Queen's mines samples	18.8.1.22	LRA6; RRP22; PC8	JAN AS CSM	0.50 4 24
	15	Highgate cremation analysis and report	2.4.3.3	RRP3	SM	1
	16	**Conservation** - X rays		To aid tasks 19 & 26	JAN MB	1 3
	17	Technological advice on particular queries and analysis as appropriate		To aid tasks 19, 25 & 26	JAN DS Spec AMLab	1 1 1
	18	Petrological analysis	18.8.1.23	RRP7	HQ DW RT	10 8 10
	19	XRF analysis of stonework & metalwork	18.8.1.26	RRP7; T7	JAN AMlab	1 5
	20	Geological identifications stonework	18.8.1.24	RRP9; T7	HQ RT	5 5
	21	Organic residues ceramics	18.8.1.25	RRP7; T8	JAN HQ Asst & RE	1 5 33
	22	**Conservation** Reconstruction & Consolidation	18.8.1.27	RRP8; RRP9; P9	JAN HQ MB	4 3 31
4	23	FINDS ANALYSES				

	24	Prehistoric pottery	18.8.1.13	LRA3; RRP7; RRP8; RRP11; P9; T7; L3	HQ	63
	25	Prehistoric stonework	18.8.1.17	RRP9; T7	HQ JAN	15.50 1
	26	Prehistoric metalwork	18.8.1.19	RRP8; RRP11; P9	HQ SB	3 1
	27	Early medieval ceramics	18.8.1.14	RRP7	CT	2
	28	Small Finds analysis	18.8.1.21	RRP8	JAN CT	1 2
	29	Lithics analysis	18.8.1.16	LRA2; RRP8; RRP11	JAN PB AR	2 12 2
	30	Technological analysis & feedback to team		To aid analysis in tasks 24 -28	JAN HQ	1 1
	31	Prehistoric clay	18.8.1.18	RRP7	HQ	1
	32	Specialist meeting in Truro to discuss long-term archive needs	18.9.9	To organise long-term curation	JAN HQ CT MB	1 1 1 1
	33	**FINDS ANALYSES COMPLETED *PROJECT MILESTONE**				
5	34	**ENVIRONMENTAL ANALYSIS**				
	35	Pollen analysis	18.8.1.29	RRP14; P6; T9	VS or VS and JG	44 16 28
	36	Insect analysis	18.8.1.29	T9	DS	3
	37	Macroplant remains analysis	18.8.1.30	RRP16; P8	VS	50.5
	38	Soils analysis	18.8.1.31	T9	MC JH	2 6
	39	Feedback to environmental team **MONITORING MEETING & *PROJECT MILESTONE**		To aid in tasks 35 -38	JAN JAN	8 1

	40	**ENVIRONMENTAL ANALYSES COMPLETED**				
6	41	**STRUCTURAL ANALYSES**				
	42	Mesolithic data - analysis and text	18.8.1.3	LRA1; L3	JAN AR	1 1
	43	Liasion time for prehistoric text with team			JAN HQ	10 10
	44	Neolithic data - analysis and text	18.8.1.4	LRA1; RRP1; P6; L3	JAN HQ	4 2
	45	Beaker data - analysis and text	18.8.1.5	LRA1; RRP2	JAN	1
	46	Early Bronze Age data - analysis and text	18.8.1.6	LRA1; RRP3; L1	JAN HQ	12 3
	47	Early prehistoric summary		LRA2; RRP4; RRP11; L3	JAN HQ	3 3
	48	Middle Bronze Age data - analysis and text	18.8.1.7	LRA2; RRP4; RRP11; L3	JAN	9
	49	Middle Bronze Age summary	18.8.1.7	LRA2; RRP4; RRP11; L3	JAN HQ	3 3
	50	LBA/Early Iron Age data - analysis and text	18.8.1.8	LRA3; RRP12; RRP17; P7; L3	JAN	5
	51	LBA/Early Iron Age summary		LRA3; RRP12; RRP17; P7; L3	JAN HQ	1 2
	52	LIA/Roman data - analysis, text and summary	18.8.1.9	LRA3; RRP6; RRP13; RRP17; PC4; P8; T4; L3	JAN HQ	14 4
	53	Environmental summaries	Combine tasks 35 to 38	RRP14; RRP15; RRP16; T8 & T9	VS RG	4 2
7	54	**HISTORIC DATA ANALYSIS**				
	55	Historic landscape data - text and analysis	18.6.9 & 18.8.1.10	LRA4; LRA5; RRP20; RRP21	JAN PCH	3 15
	56	Medieval and post-medieval ceramics analysis and discussion	18.8.1.15	LRA5; RRP21: PC8	JAN CT	3 5
	57	Text - minor rural sites	18.8.1.15	LRA3; RRP21	JAN PCH	3 5

	58	Historical landscape - industrial sites	18.8.1.11	LRA5; RRP21; PC8	AS JAN	7 3
8	59	**Overall Summary**	Combine tasks 55-58	LRA4; LRA5; RRP20; RRP21	PCH	3
	60	Introduction, overall summaries & conclusions		To fulfill aims set out in 18.2 and 18.6	JAN	15
	61	Illustration requirements - site plans	Linked to tasks 42, 44 - 49, 60	LRA3; LRA5; RRP20; RRP21	JAN RR PCH AS	5 9 3 2
	62	Illustration requirements - artefacts	Linked to tasks 24 -29, 31	LRA1, LRA2, LRA3; RRP1 to RRP9; P6; P9	JAN RR PB HQ CT AR	4 9 1 5 0.50 1
	63	Photography for publication, printing and reprographic requirements			JAN	4
	64	Production of site plans & amendments as necessary			VS RR	2 99
	65	Production of artefact illustrations and amendments as necessary			JAN RR HQ	5 57.50 5
	66	Reconstruction drawings - production and discussion	Linked to tasks 42, 44 - 49, 60	LRA3; LRA5; RRP20; RRP21	RR	Piece work
9	67	**READY FOR PRODUCTION**				
	68	Assemble 1st draft **MONITORING MEETING & *PROJECT MILESTONE**			JAN JAN	20 1
	69	Amend text after editing comments by team			JAN PGR	30 5

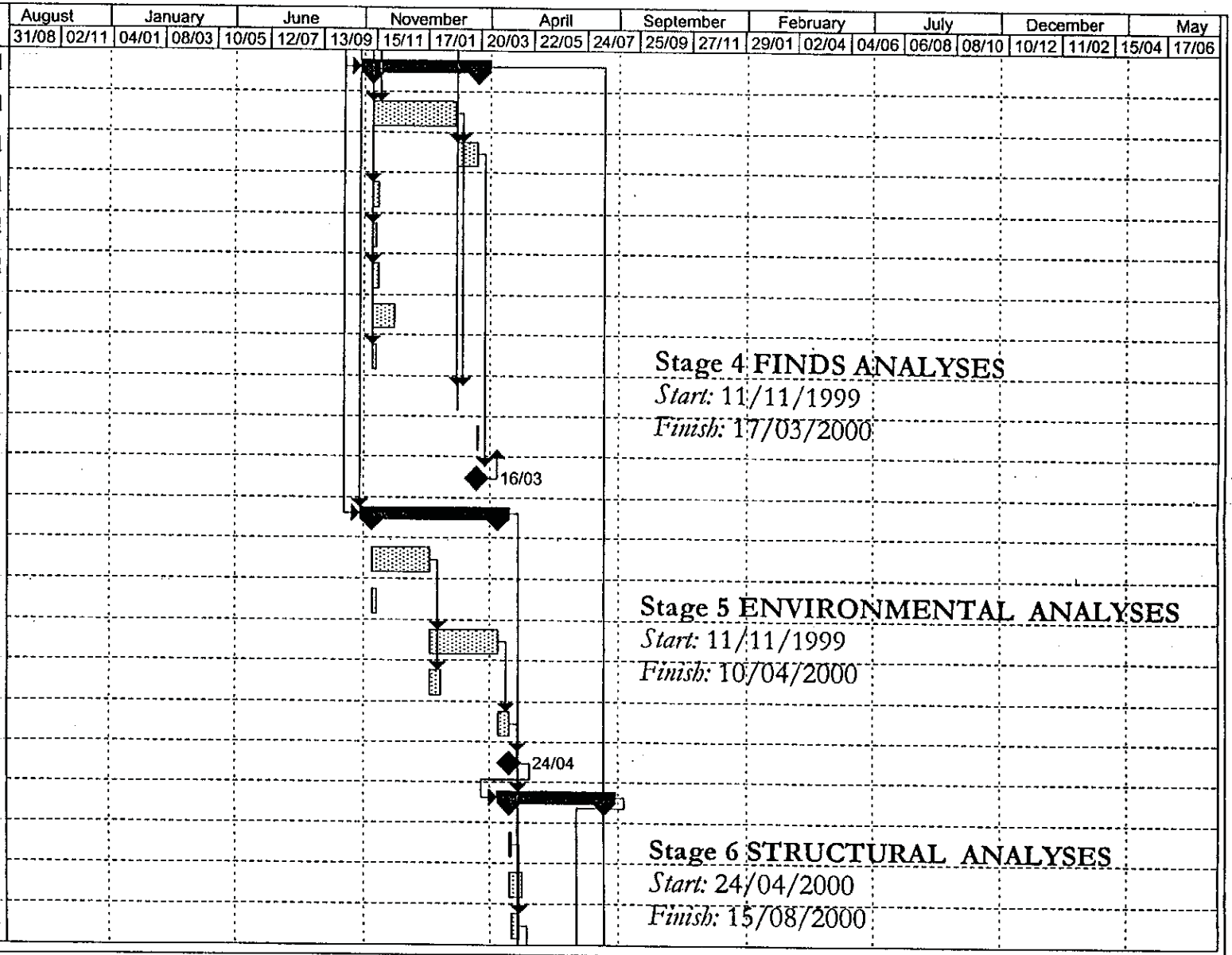
	70	Comments on circulation of 1st draft			JAN PCH AS HQ JD SN RP DS CT DW RE JG optional DS VS RT PB AR MC JH DS RG Referee	2 5 3 8 1 1 1 1 1 3 3 4 1 8 3 2 2 1 1 1 3 5
	71	Team meeting - Bristol **MONITORING MEETING & *PROJECT MILESTONE**			JAN PGR Ref PCH AS HQ CT DW RE JGoptional SM VS RT AR PB MC JH DS RG RR	1.50 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	72	Compilation of figures & text			JAN	8

	73	Assemble 2nd draft and submit for referee's comments			JAN Ref	8 5
10	74	**REVISED TEXT & DISSEMINATION**				
	75	Revisions to text after ref's comments **MONITORING MEETING & *PROJECT MILESTONE**			JAN PCH AS HG VS RG JAN Ref	10 5 5 7 6 3 1 1
	76	Liason with printing team			JAN	6
	77	Final text format **MONITORING MEETING & *PROJECT MILESTONE**			JAN JAN	20 1
	78	Production 1st galley proofs and read galleys			JAN PCH AS HQ DS CT DW RE JG optional SM DS VS RT AR PB MC JH DS RG	14 4 3 6 1 1 2 2 3 1 1 6 2 1 2 1 1 1 3
	79	Collation & compilation of master galley text			JAN	10

	80	Production & printing *PROJECT MILESTONE			Print team	40
	81	Dissemination of report			JAN	3
	82	Archive deposition			JAN CT	6 5
	83	SMR input MONITORING MEETING & *PROJECT MILESTONE			JAN JAN	5 1
		PROJECT COMPLETED				

Suggested project milestones (*) and suggested monitoring points have been highlighted.

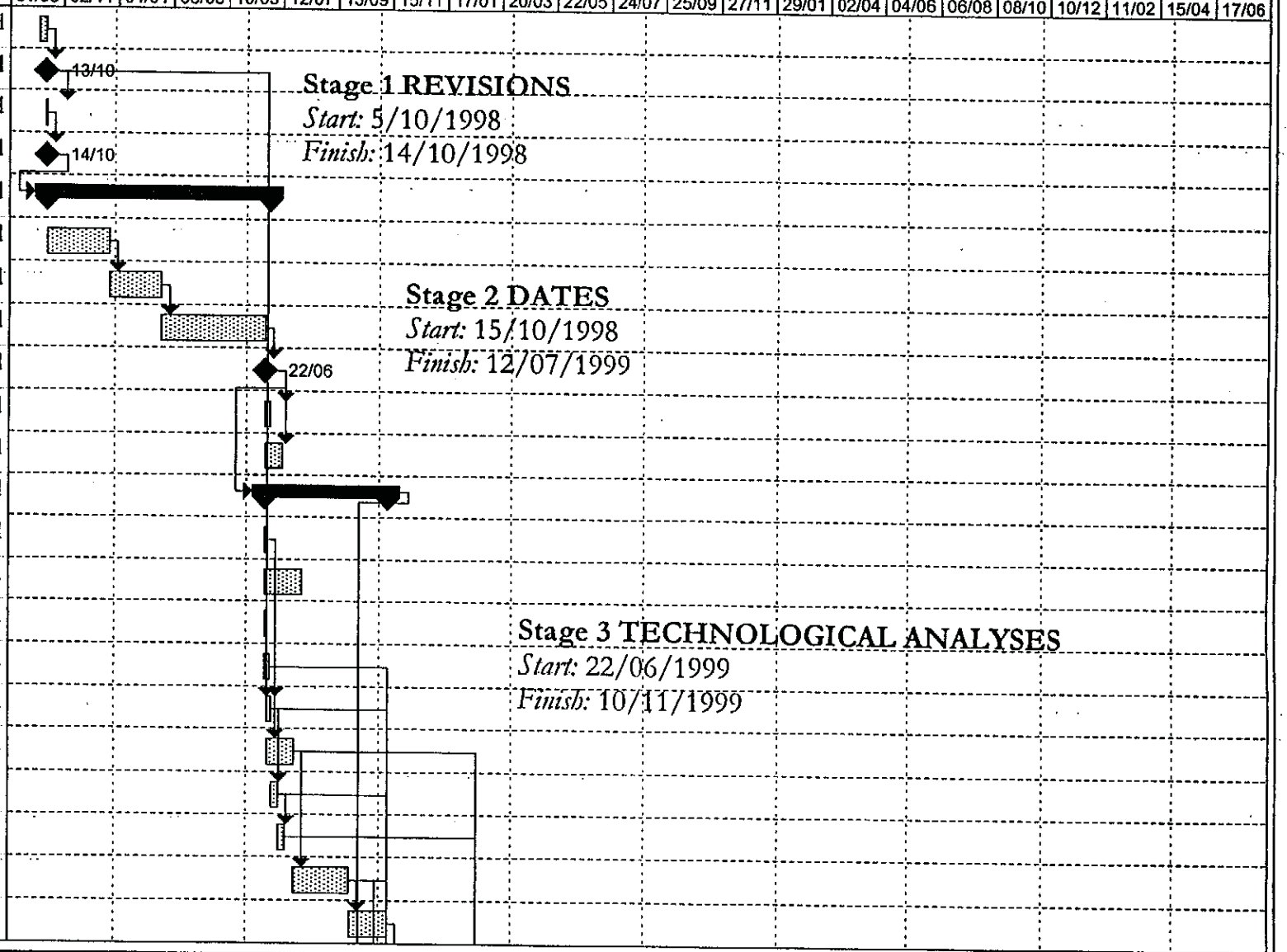
ID	Task Name	Duration
23	**Prehistoric Finds analysi**	**80.5d**
24	Prehistoric pot analy	63d
25	Prehistoric stonework	16.5d
26	Prehistoric metalwork	5d
27	Early medieval pot	2d
28	Small finds analysis	5d
29	Lithics analysis	16d
30	Tech. analy feedback	2d
31	Prehistoric clay	1d
32	Archive meeting Tru	1d
33	**Finds analysis complete**	**0d**
34	**Environmental data**	**94.5d**
35	Pollen analysis	44d
36	Insects analysis	3d
37	Plant remains analysi	50.5d
38	Soils analysis	8d
39	Envir. data feedback	8d
40	**Envir.data complete**	**0d**
41	**Structural analy - text**	**71d**
42	Mesolithic data - text	2d
43	Liaison time	10d
44	Neolithic data - text	6d



Project: A30 Project timetable
Date: Thu 02/07/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

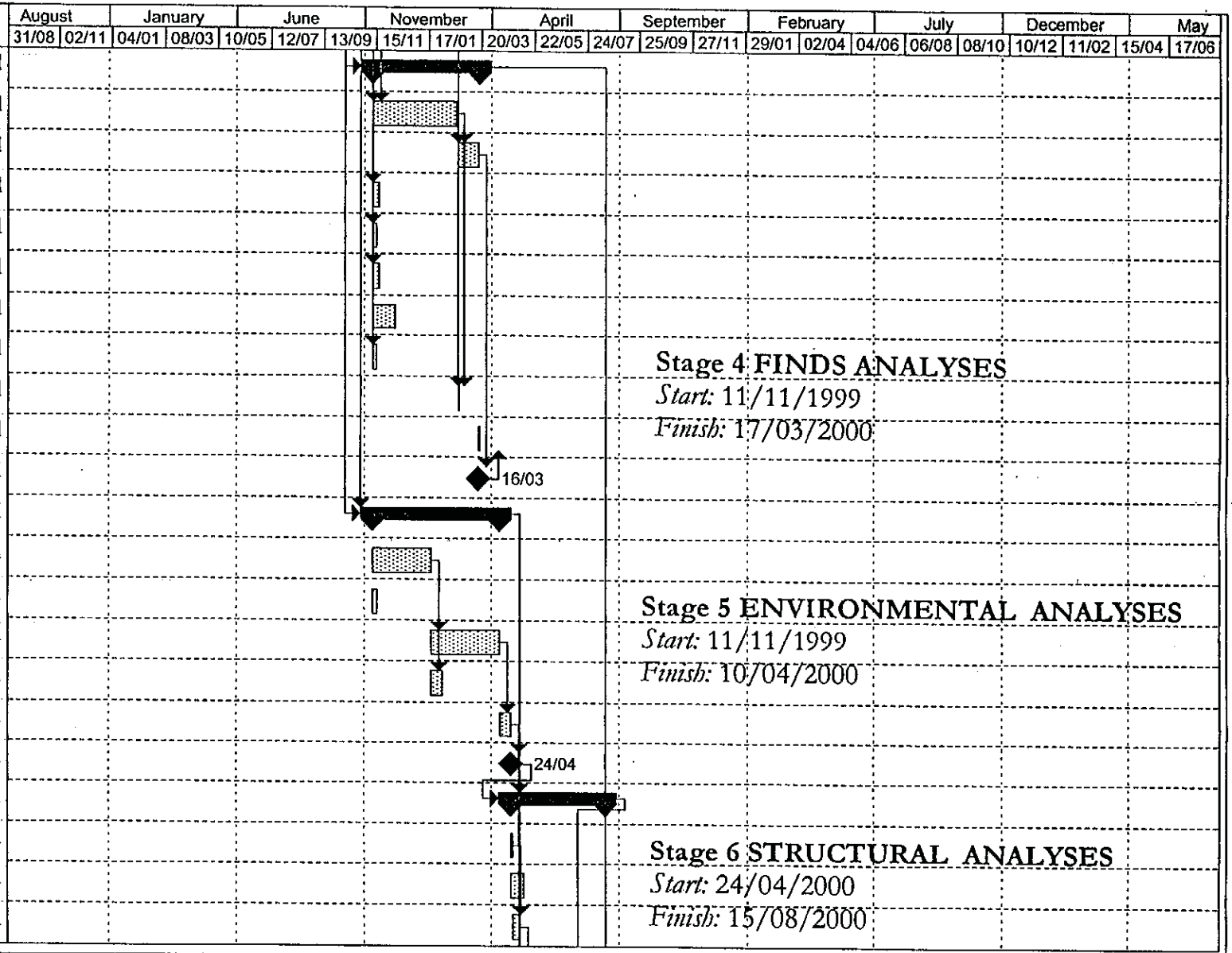
ID	Task Name	Duration
1	Revisions to assessment	6d
2	**Assessment begins**	0d
3	Appoint referee	1d
4	Team meeting - Bristol	0d
5	**Dates and adjustments**	159.5d
6	Sorting samples	45.25d
7	Charcoal prep & spea	36.25d
8	Dates submitted	75d
9	Dates available	0d
10	Revised strategies	3d
11	**Adjust phasing**	12d
12	**Technological analyses**	88.5d
13	Photography - finds	2.5d
14	Queen's Mine sample	26.5d
15	Cremation analysis	1d
16	Conservation X-RA)	3d
17	Technological advice	2d
18	Ceramic petrology	18d
19	XRF analysis	6d
20	Geological stonework	5d
21	Residue analysis	40d
22	Conservation - recon	28d



Project: A30 Project timetable
Date: Thu 02/07/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

ID	Task Name	Duration
23	**Prehistoric Finds analysi**	**80.5d**
24	Prehistoric pot analy	63d
25	Prehistoric stonewor	16.5d
26	Prehistoric metalwor	5d
27	Early medieval pot	2d
28	Small finds analysis	5d
29	Lithics analysis	16d
30	Tech. analy feedback	2d
31	Prehistoric clay	1d
32	Archive meeting Tru	1d
33	**Finds analysis complete**	**0d**
34	**Environmental data**	**94.5d**
35	Pollen analysis	44d
36	Insects analysis	3d
37	Plant remains analysis	50.5d
38	Soils analysis	8d
39	Envir. data feedback	8d
40	**Envir.data complete**	**0d**
41	**Structural analy - text**	**71d**
42	Mesolithic data - text	2d
43	Liaison time	10d
44	Neolithic data - text	6d



Project: A30 Project timetable
Date: Thu 02/07/98

Task
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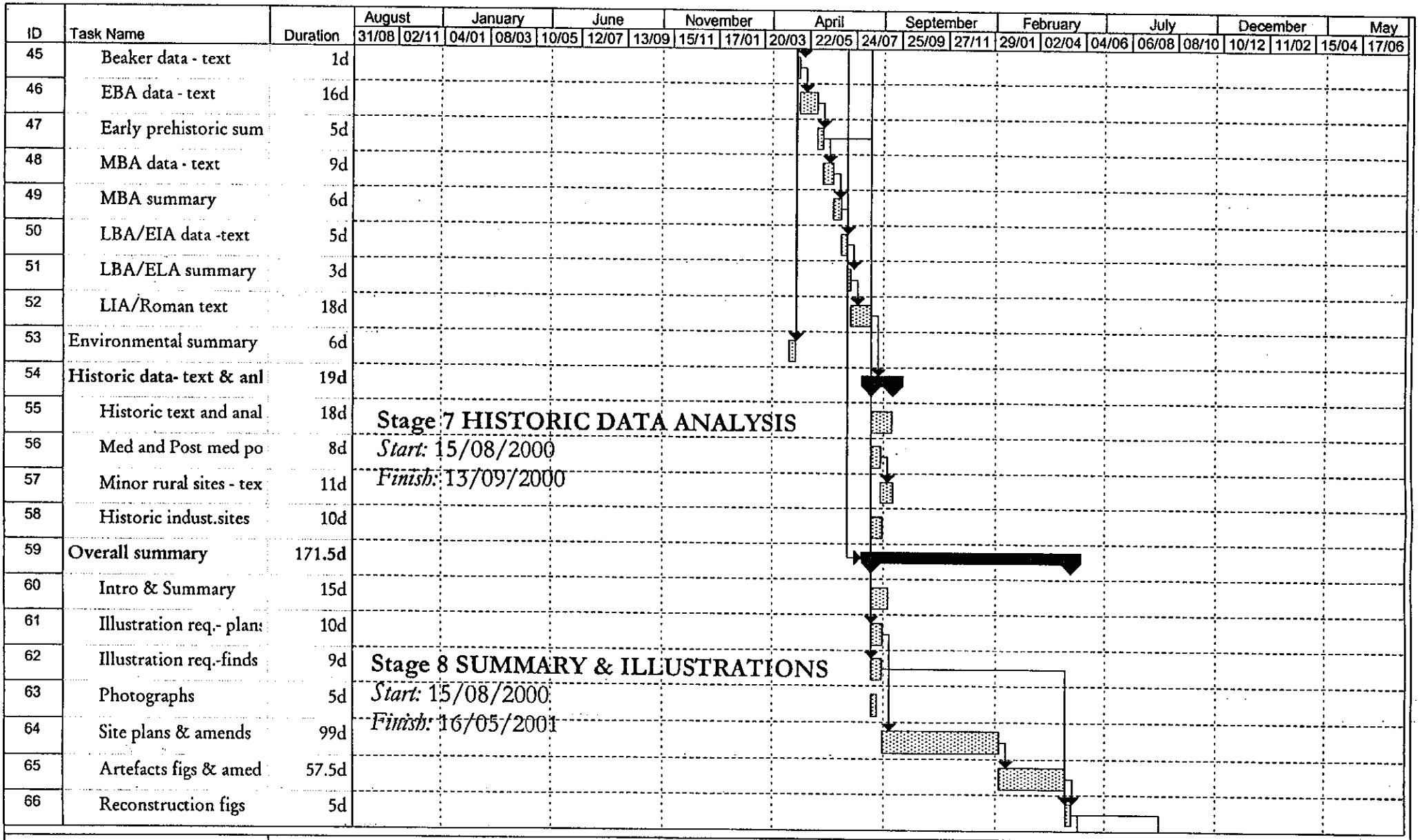

ID	Task Name	Duration
45	Beaker data - text	1d
46	EBA data - text	16d
47	Early prehistoric sum	5d
48	MBA data - text	9d
49	MBA summary	6d
50	LBA/EIA data -text	5d
51	LBA/ELA summary	3d
52	LIA/Roman text	18d
53	Environmental summary	6d
54	**Historic data- text & anl**	**19d**
55	Historic text and anal	18d
56	Med and Post med po	8d
57	Minor rural sites - tex	11d
58	Historic indust.sites	10d
59	**Overall summary**	**171.5d**
60	Intro & Summary	15d
61	Illustration req.- plans	10d
62	Illustration req.-finds	9d
63	Photographs	5d
64	Site plans & amends	99d
65	Artefacts figs & amed	57.5d
66	Reconstruction figs	5d

Project: A30 Project timetable
Date: Thu 02/07/98

Task
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Rolled Up Progress

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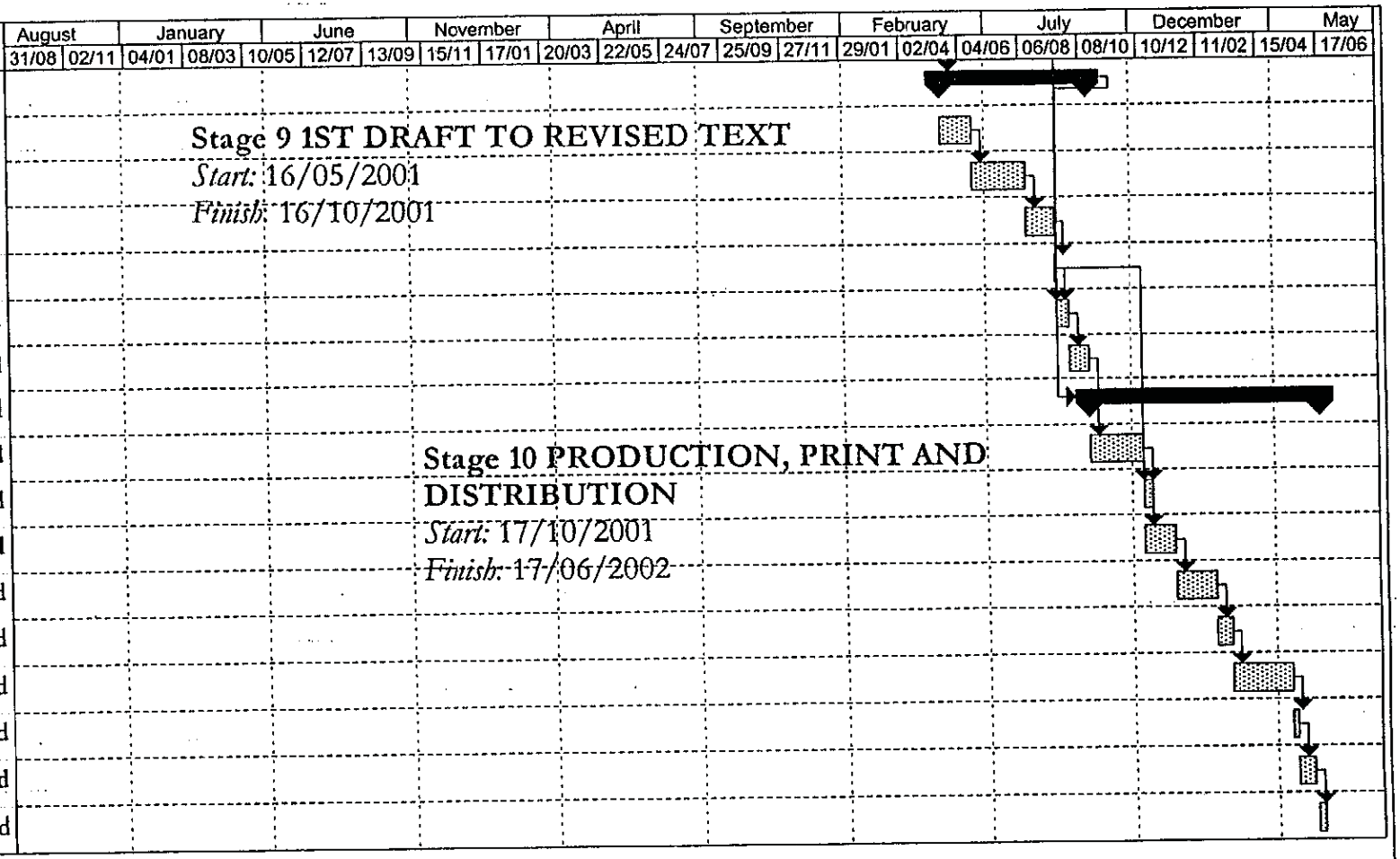
ID	Task Name	Duration
67	**Ready for production**	96d
68	Assemble 1st draft	20d
69	Amend text after edit	35d
70	Circulate 1st draft	19d
71	**Team meeting**	1d
72	Compilation figs & te	8d
73	2nd draft & refs com	13d
74	**Revised text & print**	152d
75	Revisions post referee	36d
76	Liaise with printer	6d
77	**Final text format**	20d
78	Proof read galleys	27d
79	Collation & galley m:	10d
80	Prod & print	40d
81	Dissemination	3d
82	Archive - deposition	11d
83	SMR input	5d



Project: A30 Project timetable
Date: Thu 02/07/98

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

18.9.4 Accommodation and Facilities

Project management, co-ordination and collation of all the data will take place in the offices of The Cornwall Archaeological Unit, Cornwall County Council, The Kennall Building, Truro, Cornwall. These are comfortably heated in winter and well-ventilated in summer and contain work stations, desk space, storage space and welfare facilities such as toilets and a kitchen.

Most of the specialist analyses will take place at various locations in the country where individual specialists are based. These vary from dedicated offices in private houses to scientific laboratories. Work on some of the finds will take place in Truro in the Finds Archive store within the CAU complex at Old County Hall. This is a dust-free environment with the provision to lay out material, is adequately lit and has a wash basin facility.

Cornwall County Council has a NO SMOKING policy in all offices.

A30 Project: Plant and pollen analyses by Vanessa Straker
This work will be done in the School of Geographical Sciences, University of Bristol using office and laboratory facilities that comply with COSSH regulations for the tasks to be performed. Protective clothing will be worn when appropriate to the task. Smoke detectors and fire alarms are fitted in the laboratories and offices and laboratory equipment is subject to regular inspections. Visits may be made to refrence libraries in teh Universiuty and elsewhere.

Tasks:

- *Plant Macrofossil analysis*: computer, microscope, refrence collection, library, sieves, laboratory glassware etc.,
- *Pollen analysis:* computer, microscope, refrence collection, chemicals etc, for pollen preparations, laboratory glassware, library etc.,

A30 Project: Charcoal Analysis by Rowena Gale
This will be done in a room in a private house dedicated as an office with adequate ventilation, lighting, heating with a smoke detector in the adjacent hall. Visits may be made to reference libraries. *Equipment*: computer, microscope, reference collection, laboratory glassware, sieves.

18.9.5 Health, Saftey & Security Guidelines at CAU

Cornwall Archaeological Unit is a section of the Planning Directorate of Cornwall County Council. The Unit follows the County Council's "Statement of Safety Policy" and also the Planning Directorate's "Statement of Safety Policy".

A comprehensive fire and safety security system is installed in the Unit Offices. All fire exists are marked and fire extinguishers compliant with current EC directives are installed in each office. There are two nominated fire wardens on the CAU staff who are responsible for making everyone aware of the fire evacuation procedures within the offices.

- Access into the complex is via a security ID card issued to all members of staff.
- Access into the CAU computer network is protected by password.
- Cornwall County Council follows up-to-date guidelines regarding the use of VDUs. All electrical equipment in the offices is regularly monitored and safety inspections are made by trained officers. The computer hardware is checked by the Cornwall County Council Information Systems Groups and is the year 200 compliant.
- There are four nominated First Aiders on the staff of CAU and each section is equipped with a FIRST AID box.
- Cornwall County Council has a NO SMOKING policy in all offices.

Current Archive Storage Conditions at CAU - Primary Records
Work produced by the Cornwall Archaeological Unit exists in several media - electronically generated and stored, paper records, graphic records on photographic and drafting film.

The excavation archives for the sites Little Gaverigan Barrow, Highgate Ritual Enclosure, Penhale Round, Penhale Moor and Halloon Farm are electronically stored and can be accessed on the CAU network through Excavations Records - Delilah. Paper archives exist for all other sites on the A30 project and these are currently stored in the Field Officer's Room at CAU. The contents of each archive for this project area listed in section 17.2.

The electronic record
1. The whole system of electronic files is backed up every Monday to a DAT tape. Over the following 4 days up-dated files are backed up to the same DAT tape. Tapes are removed and recycled on a 2 week cycle.
2. There is a limited 50 hours usage for each DAT tape.
3. Each month there is a back-up for the whole system and this is retained for a 12 month cycle.
4. Weekly back ups are kept on site in a desk drawer in the Sites and Monuments Room in the main offices of The Cornwall Archaeological Unit, Cornwall County Council, the Kennall Building, Truro, Cornwall. In the event if evacuation the tapes are removed by a responsible named person. Periodically a system back-up is made on a DAT tape and taken home by the Cornwall and Isles of Scilly Sites and Monuments Officer.

Paper Records
Handwritten paper records, files and correspondence relating to project work are held together by green cord treasurey tags and stored in brown files labelled with the project number and site code. These are stored in archive-standard bankers files on shelves in the Field Officer's Room at CAU.

Photographic records
The CAU photographic archive is kept in the photographic archive store. Negatives and slides are hung in archive-quality plastic wallets and filed in 4 drawer filing cabinets. the stir environment is table and monitored by a thermo-hydrograph. Conditions here are

guided by with reference to *The Care and Storage of Photographs - Recommendations for Good Practice* by David Wilson 1997. Copies of any original photographic records are made for lecture sand presentation purposes. Monochrome prints are stored in cabinets in the normal office environment.

Field Drawings and Research Archive drawings
At CAU field adrwings created in pencil are stored either in the Graphic Record Envelope (GRE) which is a VISIFILE (A2 archive-standard), or in the Grphic Record Roll (GRR) system. They are contained in archive-standrda containers and catalogued with the unique site number and code.

Inked-up research drawings area stored in open hanging planninig franes and acatalogued as the Graphic Record Hangfing (GRH) system. Graphic records are kept in dry storage conditions - in purpose built cupbaords and hanging franes away from harsh and dricet sunlight.

Finds Archive
All finds excavated during the A30 project are catalogued and stored by category in archive-standard boxes in the CAU find's store. Details of artefact inventories for each site are presented in section 17.2.

18.9.6 BUDGET - STAFF & TRAVEL COSTS

Overall project supervision
Peter Rose BA (PR) -*Principal Archaeologist - Cornwall Archaeological Unit*,
The Planning Directorate, The Kennall Building, Old County Hall,
Station Road, Truro, Cornwall TR1 3AY

1998-1999 rate @£130 per day
Note: travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings Bristol	2 days (@£130)	£260
-	Overall project supervision	20 days	£2,600
69.	Editing comments	5 days	£650
		27 days	**£3,510**

Travel costs

Task no:	Tasks	Estimate
4 & 71 .	2 project meetings Truro to Bristol @£75.00	£150

Project referee (Ref) - to be appointed once project gets instruction to proceed

1998-1999 rate @£150 per day
Note: travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71	Project meetings Bristol	2 days (@£150)	£300

11.	Comments on revised strategies	2 days	£300
11& 75	Monitoring meetings	2 days	£300
70.	Comments on first draft	5 days	£750
73.	Comments on 2nd draft	5 days	£750
		16 days	**£2,400**

Travel costs

Task no:	**Tasks**		**Estimate**
4 & 71.	2 project meetings in Bristol	@£100.00	£200
11 & 75	Monitoring meetings	@£100.00	£200
			£400

Project Manager, Stratigraphic and Structural Analyses, Interpretation and Overall Presentation of the results of the project

Jacqueline A Nowakowski BA MIFA (JAN) - *Senior Archaeologist - Cornwall Archaeological Unit,*
The Planning Directorate, The Kennall Building, Old County Hall,
Station Road, Truro, Cornwall TR1 3AY

1998-1999 rate @£130 per day
Note: travel costs quoted are Standard Open Day Return by train (1997).

Task no:	**Tasks**	**Time**	**Estimate**
1.	Revisions to assessment - revise costs	5 days (@£130)	£650
2.	Instruction to begin - organise project meeting	1 day	£130
3.	Appoint referee	1 day	£130
4 & 71.	Project meetings Bristol	2 days	£260
10.	Revisions to dating strategies after charcoal results back	3 days	£390
8.	Dating forms filled in	15 days	£1,950
11.	Revisions to overall phasing once dates are back	5 days	£650
11.	Inform team of dates and any revised objectives as necessary	3 days	£390
13.	Organise photography of artefacts	0.50 day	£65
17.	Seek technological advice	1 day	£130
19.	Organise XRF analy.	1 day	£130
14.	Organise samples to CSM	0.50 day	£65
16. & 22	Conservation liaison and project management	5 days	£650
28.	Small finds analysis	1 day	£130
29.	Lithics project management feedback	2 days	£260

25 & 30	Feedback on stonework & liaise with HQ	2 days	£260
32.	Archive meeting with HQ, AT, MB & CT in Truro	1 day	£130
82.	Organise materials for archive	1 day	£130
39.	Feedback and liaison with environmental team	8 days	£1,040
21 & 26	Feedback and liaison with artefacts specialists	3 days	£390
42.	Text for Mesolithic data	1 day	£130
44.	Text for Neolithic data	4 days	£520
45.	Text for Beaker data	1 day	£130
46.	Text for EBA data	12 days	£1,560
47.	Early prehistoric summary	3 days	£390
48.	Text for MBA data	9 days	£1,170
49.	MBA summary	3 days	£390
50.	Text for LBA/IA landscape	5 days	£650
51.	LBA/EIA summary	1 day	£130
52.	Text for LIA/Roman data	12 days	£1,560
	& LIA/Roman summary	2 days	£260
43.	Liaison time with HQ for prehistoric texts	10 days	£1,300
56.	med and post-med ceramics	3 days	£390
57.	Historic landscape text - minor sites	3 days	£390
55 & 58	Liaison time with PCH & AS over historic data	6 days	£780
60.	Summaries and introduction	15 days	£1,950
68.	Assembly first draft - all data	20 days	£2,600
61 & 65	Discussion of illustration requirements with RR	10 days	£1,300
62 & 63	Artefact illustrations with HQ, RR, PB and CT	8 days	£1,040
69.	Amendments on text after first edit	20 days	£2,600
70.	Circulate edited first draft	2 days	£260
69.	Amendments after feedback from project team	10 days	£1,300
71.	Project meeting organise	0.5 day	£65
72.	Compilation of figs and text and liaise with HQ and RR	8 days	£1,040
73.	Assembly 2nd draft and send to referee	8 days	£1,040
75.	Amendments after feedback from referee	10 days	£1,300
77.	Production and assembly		

	final draft	20 days	£2,600
78.	Sent out galleys for proof reading	2 days	£260
78.	Proof reading galleys	12 days	£1,560
79.	Collation and compliation of master galley proofs	10 days	£1,300
76.	Liaison with printers	6 days	£780
81.	Dissemination of final report	3 days	£390
82.	Identify specific archive costs	3 days	£390
82.	Collation and deposit archive and liaise with CT	2 days	£260
83.	SMR input	5 days	£650
8x	Monitoring meetings with project sponsor	8 days	£1,040
-	Additional overall project management	50 days	£6,500
		357.50 days	**£46,475**

Travel costs

Task no:	**Tasks**	**Estimate**
4 & 71.	2 project meetings Truro to Bristol @£75.00	£150
4, 11, 39, 68, 71, 75, 77 & 83	Monitoring meetings with project sponsor @£75.00	£600
		£750

Historic landscape analysis, discussion and interpretation

Peter Herring BA MPhil AIFA (PCH) *Senior Archaeologist - Cornwall Archaeological Unit,*

Planning Directorate, The Kennall Building, Old County Hall, Station Road, Truro, Cornwall TR1 3AY

1998-1999 rate @£130 per day
Note: travel costs quoted are Standard Open Day Return by train (1997).

Task no:	**Tasks**	**Time**	**Estimate**
4 & 71	Project meetings Bristol	2 days (@£130)	£260
55.	Text & Historic landscape analysis	15 days	£1,950
57.	Text - rural minor sites	5 days	£650
59	Overall summary	3 days	£390
61.	Discussion of illustration requirements with RR	3 days	£390
70.	Comments on first draft	5 days	£650
75.	Revisions after referee	5 days	£650

78.	Proof reading galleys	4 days	£520
		42 days	£5,460

Travel costs

Task no:	Tasks	Estimate
4 & 71.	2 project meetings Truro to Bristol @£75.00	£150
		£150

Industrial landscape analysis, discussion and interpretation

Adam Sharpe BA MIFA (AS) *Senior Archaeologist - Cornwall Archaeological Unit,* Planning Directorate, The Kennall Building, Old County Hall, Station Road, Truro, Cornwall TR1 3AY

1998-1999 rate @£130 per day
Note: travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings Bristol	2 days (@£130)	£260
13.	Photography - finds	2 days	£260
58.	Text industrial character	2 days	£260
	Industrial sites texts	5 days	£650
14.	Liaise with CSM and geologist on samples	4 days	£520
61.	Discussion of illustration requirements with RR	2 days	£260
70.	Comments on first draft	3 days	£390
75.	Revisions after referee	5 days	£650
78.	Proof reading galleys	3 days	£390
		28 days	£3,640

Travel costs

Task no:	Tasks	Estimate
4 & 71	Project meetings Truro to Bristol @£75.00	£150
		£150

Prehistoric ceramics, stonework, clay and metalwork analyses and contributor to discussion and interpretation of prehistoric sites

Henrietta Quinnell BA FSA MIFA (HQ) - *Freelance Archaeological Consultant*
9 Thornton Hill, Exeter, Devon EX4 4NN

1998-1999 rate @£115 per day
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project Meetings	2 days (@£115)	£230
11.	Comments on dates	2 days	£230
18.	Scan ceramics with RT & Liaise with DW	10 days	£1,150

20	Geological and technological analyses of stonework	5 days	£575
21.	Selection of pot for residues and liaise with RE	5 days	£575
24.	Prehistoric pottery analyses	63 days	£7,245
25.	Analyses of stonework	15.50 days	£1,782.50
31.	Analyses of clay	1 day	£115
26.	Metalwork analyses	3 days	£345
30.	Liaise with JAN re technological analyses	1 day	£115
32.	Project meeting re archive in Truro with AT, MB, JAN & CT	1 day	£115
44.	Contribution to Neolithic text	2 days	£230
46 & 47	Contribution to EBA text & summary	6 days	£690
49.	Contribution to MBA summary	3 days	£345
51.	Contribution to LAB/EIA summary	2 days	£230
52.	Contribution to LIA/Roman discussion on Penhale Round	4 days	£460
43.	Liaison time over text with JAN	10 days	£1,150
62.	Discussion of illustration requirements with RR & JAN	5 days	£575
65.	Comments on artefacts illustrations for publication	5 days	£575
70.	Comments on first draft	8 days	£920
75.	Revisions after referee	7 days	£805
78.	Proof reading galleys	6 days	£690
		166.50 days	**£19,147.50**

Travel costs

Task no:	**Tasks**	**Estimate**
4 & 71.	2 project meetings Exeter to Bristol @£16.00	£32.00
32.	1 project meeting Truro @£18.00	£18.00
		£50.00

Description Roman coin from Penhale Round

Dr. John Davies (JD) -*Numismatic Consultant,*
16 Mount Pleasant, Norwich, Norfolk NR2 2DG

Task no:	**Tasks**	**Time**	**Estimate**
70.	Comments on first draft	1 day (@£150)	£150
			£150

Commentary on prehistoric small finds - in particular metalwork
Dr. Stuart Needham (SN) - *Bronze Age metalwork specialist*
Dept of Prehistoric and Romano-British Antiquities,
The British Museum, London

Task no:	Tasks	Time	Estimate
70.	Comments on first draft	1 day	no cost

Sarnia Butcher (SB) - to be confirmed.
Pilot's Retreat, Church Road, St. Mary's, Isles of Scilly, Cornwall TR21 ONA

Task no:	Tasks	Time	Estimate
26.	Advice on prehistoric brooch	1 day	£150
			£150

Advice on early medieval coin from Penhale Round
Roger Penhallurick (RP) - *Curator,*
The Royal Cornwall Museum,
River Street, Truro TR 1 2SJ

Task no:	Tasks	Time	Estimate
70.	Comments on first draft	1 day	no cost

Summary of prehistoric industrial evidence from Penhale Round
Dr. David Starley (DS) - *Archaeological metallurgist*
Ancient Monuments Laboratory, English Heritage, Fortress House,
23 Savile Row, London W1X 1AB

1997-1998 rate @£200 per day

Task no:	Tasks	Time	Estimate
17.	Liaise on XRF results	1 day (@£200)	£200
70.	Comments on first draft	1 day	£200
78.	Proof read galleys	1 day	£200
		3 days	£600

Analysis and discussion of early medieval pottery
Carl Thorpe BSc (CT) - *Archaeological Finds Specialist, Cornwall Archaeological Unit,*
The Planning Directorate, The Kennall Building, Old County Hall, Station Road, Truro, Cornwall TR1 3AY

1998-1999 rate @£130 per day
Note: travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71	Project meetings	2 days (@£130)	£260
28.	Text coin and bell	2 day s	£260

27.	Early medieval ceramics	2 days	£260
32.	Archive meeting in Truro with AT, HQ, MB and JAN	1 day	£130
56.	Med and post-med ceramics	5 days	£650
62.	Discussion artefacts illustration	0.50 day	£65
70.	Comments on first draft	1 day	£130
78.	Read galley proofs	1 day	£130
82.	Helping collate archive	3 days	£390
82.	Packing and moving archive to museum	2 days	£260
		19.50 days	**£2,535**

Travel costs

Task no:	**Tasks**	**Estimate**
4 & 71.	2 day return trips from Truro to Bristol @ £75.00	**£150**

Analysis and interpretation of prehistoric ceramic petrology
David Williams (DW) - *HBMC(E) Ceramic and Lithic Petrology Project,*
Dept of Archaeology, University of Southampton

1998-1999 rate @£200 per day
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	**Tasks**	**Time**	**Estimate**
4 & 71.	Project meetings	2 days (@£200)	£400
18.	Thin sections of prehistoric pottery (25) and feedback to HQ and report	8 days	£1,600
70.	Comments on first draft	3 days	£600
78.	Read galley proofs	2 days	£400
		15 days	**£3,000**

Travel costs

Task no:	**Tasks**	**Estimate**
4 & 71.	2 day return trips from Southampton to Bristol @ £60.00	**£120.00**

Analysis and interpretation of organic residues on prehistoric ceramics
To be appointed - Research Assistant,
Organic Geochemistry Unit, School of Chemistry,
University of Bristol, Cantock's Close, Bristol BS8 1TS

Dr. Richard Evershed (RE) - *Geochemist*

Organic Geochemistry Unit, School of Chemistry,
University of Bristol, Cantock's Close, Bristol BS8 1TS

1998-1999 Rates £75 per sherd + overhead
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings	2 days (@£66)	£132
21.	Select residue samples and liaise with HQ & JAN	3 days (@£200)	£600
21.	Organic residue analysis of 20 sherds	30 days (@£75 a sherd)	£1500
21.	Full report with analysis and overhead	(included in above)	£500
70.	Comments on first draft	3 days (@£200)	£600
78.	Read galley proofs	2 days (@£200)	£400
		40 days	**£3,732**

Travel costs

Task no:	Tasks	Estimate
21.	2 day return trips from Bristol to Truro @ £75.00	£150.00

Analysis of samples from Queen's Mine
Specialist - to be appointed (CSM)
Camborne School of Mines Associates Ltd.,
Rosemanowes,
Herniss,
Penryn, Cornwall TR10 9DU

Task no:	Tasks	Time	Estimate
14.	Analysis and report on soil samples from Queen's Mine - Max. 20 samples (@£35.00 + VAT)	20 days	£700
14.	Liaise with A.Sharpe on results and soil analy. potential	2 days (@£130)	£260
14.	Geological advice	2 days (@£130)	£260
		24 days	**£1,220**

Delivery costs

Task no:	Tasks	Estimate
14.	Delivery and return of material from Truro to Camborne.	£30.00

Pollen Analysis
Dr. James Greig (JG) - *Archaeobotanist,*
Dept of Ancient History & Archaeology, Birmingham University,
Edgbaston, Birmingham B15 2TT

Estimates dated: 8.12.97
1998-1999 rate @£200 per day
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71	Project meetings	2 days (@£200)	£400
35.	Pollen analysis and text for GV92, HG93 and PR93	28 days	£5,600
70.	Comments on first draft	4 days	£800
78.	Read galley proofs	3 days	£600
		37 days	**£7,400**

Travel costs

Task no:	Task	Estimate
4 & 71.	2 day return trips from Birmingham to Bristol @£29.00	**£58**

Description and analysis of cremation deposit from Highgate Ritual Enclosure
Simon Mays (SM) *Human Bone specialist,*
Ancient Monuments Laboratory, English Heritage,
Fortress House, 23 Savile Row, London W1X 1AB

1997-1998 rate @£220 per day
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71	Project meetings	2 days (@£220)	£440
15.	Analysis and report on human cremation deposit	1 day	£220
78.	Read galley proofs	1 day	£220
		4 days	**£880**

Travel costs

Task no:	Task	Estimate
4 & 71.	2 day return trips from London to Bristol @£63.00	**£126**

Discussion of animal bone assemblage from Penhale Round
Dale Serjeantson (DS) - *Research Fellow, Faunal Remains Unit,*
Dept of Archaeology, University of Southampton S017 1BJ

1997-1998 rate @£200 per day

Task no:	Tasks	Time	Estimate
Note text already as in this report			
70.	Comments on first draft	1 day (@£200)	£200
78.	Read galley proofs	1 day	£200
		2 days	**£400**

Plant macrofossils and pollen analysis and help with radiocarbon dating
Vanessa Straker BSc MSc (VS) - *Research Associate in Environmental Archaeology,*
English Heritage Southern team, Dept of Geography, University of Bristol BS8 1SS
1998-1999 rate @£162.48 a day.

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings	2 days (@£162.48)	£324.96
6.	Supervision sorting samples	5 days	£812.40
8.	Dating co-ordination	10 days	£1,624.80
37.	Plant macrofossils analysis and text	50.5 days	£8,205.24
35.	Pollen analysis and text	44 days (est.1 VS only) or 16 days (est.2, VS & JG)	£7,149.12 or £2,599.68
53.	Text - environmental summary	4 days	£649.92
70.	Comments on first draft	8 days	£1,299.84
75.	Revisions after referee	6 days	£974.88
64.	Figure amendments	2 days	£324.96
78.	Proof reading galleys	6 days	£974.88
	Est.1	**137.50 days** **or**	**£22,341**
	Est.2	**109.50 days** **or**	**£17,791.56**

Task no:	Tasks	Estimate
35. & 37.	Pollen and macrofossils equipment	£362.20

Plant macrofossils and pollen analysis and help with radiocarbon dating
Technician support
Dept of Geography, University of Bristol BS8 1SS
1998-1999 rate @£90.64 a day

Task no:	Tasks	Time	Estimate
6.	Sorting samples	45.25 days (@£90.64)	£4,101.46
8.	Charcoal forms help	5 days	£453.20
		50.25 days	**£4,554.66**

Artefact Conservation
Margaret Brooks (MB) -*English Heritage, Contract Conservator,*
The Wiltshire Conservation Centre,
Salisbury, Wiltshire SP1 2EN.

Estimate given 3.5.1996
Revised: 11.11.97
1998-1999 rate @£187.50 per day (+ VAT = £220.31)
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4.	Project meeting	1 day (@£187.50)	£187.50
16.	Conservation: X-Ray, Reconstruct &		
22.	Consolidation	31 days	£5,812.50
32.	Archive storage meeting Truro	1 day	£187.50
		33 days	**£6,187.50**

Travel costs

Task no:	Tasks	Estimate
4.	1 day return trip from Salisbury to Bristol @ £12.50	£12.50
32.	1 day return from Salisbury to Truro @ £50.20	£50.20
		£62.70

Technological Analysis - XRF
Specialist at The Ancient Monuments Laboratory,
English Heritage, Fortress House, 23 Savile Row, London W1X 1AB

Estimate dated: 24th November 1997
1998-1999 rate @£200 per day

Task no:	Tasks	Time	Estimate
17.	Tech. advice	1 day (@£200)	£200
19.	XRF stonework and metalwork and report	5 days	£1,000
		6 days	**£1,200**

Geological Identifications, Stonework analysis and petrology
Dr. Roger Taylor BSc PhD (RT) - *Freelance Geological Consultant,*
49 Clyst Valley Road, Clyst St Mary Exeter, Exeter, Devon EX5 1DD

1998-1999 rate @ £120 p day
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings	2 days (@£120 day)	£240
18.	Petrological selection for ceramics with HQ	10 days	£1200
20.	Geological identifications	5 days	£600

70.	Comments on first draft	3 days	£360
78.	Read galley proofs	2 days	£240
		22 days	**£2,640**

Travel costs

Task no:	**Tasks**	**Estimate**
4 & 71.	2 day return trips from Exeter to Bristol @ £16.00	**£32.00**

Lithics Analysis
Dr. Alison Roberts (AR) - *Curator and Lithics Specialist*
Dept of Antiquities,
The University of Oxford,
Ashmolean Museum, Oxford OX1 2PH

Philippa Bradley (PB) BA MPhil AIFA - *Freelance Lithics Specialist,*
16 Montagu Road, Botley., Oxford OX2 9AU

AR rate @£100 p day 1998-1999
PB rate @£125 p day 1998-1999
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	**Tasks**	**Time**	**Estimate**
4 & 71.	Project meetings	2 days (@£100 day)	£200
		2 days (@£125 day)	£250
29.	Lithics analysis and report	12 days (@£125 day)	£1,500
		2 days (@£100 day)	£200
42.	Report on Mesolithic material	1 day (@£100 day)	£100
62.	Illustrations requirements	1 day (@£125 day)	£125
		1 day (@£100 day)	£100
70.	Comments on first draft	2 days (@£100 day)	£200
		2 days (@£125 day)	£250
78.	Proof reading galleys	1 day (@£100 day)	£100
		2 days (@£125 day)	£250
		28 days	
		AR = 9 days @£100	£900
		PB = 19 days @ £125	£2,375
			£3,275

Travel costs

Task no:	**Tasks**	**Estimate**
4 & 71.	4 day (2 x 2 people) return trips from Oxford to Bristol @ £44.00	**£176**

Soils Analysis and report
Matthew Canti (MC) -*Soil Scientist,*
Ancient Monuments Laboratory, English Heritage,
Fortress House, 23 Savile Row, London W1X 1AB

Jenni Heathcote (JH) - Soils scientist
Environmental Officer A30 project 1992-1994
Temporary address: Ancient Monuments Laboratory, English Heritage,
Fortress House, 23 Savile Row, London W1X 1AB

Estimate given; 16.11.95
Revised: 19.11.97

MC rate @£200 p day 1998-1999
JH rate @£150 p day 1998-1999
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings	2 days (@£200 day)	£400
		2 days (@£150 day)	£300
38.	Soil analysis and report production as edited	6 days (@£150 day)	£900
		2 days (@ £200 day)	£400
70.	Comments on 1st draft	1 day (@ £150 day)	£150
		1 day (@£200 day)	£200
78.	Proof reading	1 day (@ £150 day)	£150
		1 day (@£200 day)	£200
		16 days	
	JH =	10 days @£150	£1,500
	MC =	6 days @ £200	£1,200
			£2,700

NB Equipment costs are given below.

Travel costs

Task no:	Tasks	Estimate
4 & 71.	2 day return trips from London to Bristol @£63.00	£126
4 & 71.	2 day return trips from Cambridge to Bristol @£83.00	£166
		£292

Insects Analysis
David Smith (DS) - *Insects*
Dept of Ancient History & Archaeology, Birmingham University,
Edgbaston, Birmingham B15 2TT

Estimates dated: 14.10.97
1998-1999 rate @£154.50 per day
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings	2 days (@£154.50)	£309
36.	Insects analysis - Halloon Farm	3 days	£463.50
70.	Comments on first draft	1 day	£154.50
78.	Read galley proofs	1 day	£154.50
		7 days	**£1,081.50**

Travel costs

Task no:	Tasks	Estimate
4 & 71.	2 day trips from Birmingham to Bristol @£29.60	£59.20

Charcoal identification and analysis
Rowena Gale (RG) - *Wood Anatomist*
Folly Cottage,
Chute Chadley,
Andover,
Hampshire SP11 9EB

Estimate given: 14.10.97
1998-1999 rate @ £120 per day
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	Tasks	Time	Estimate
4 & 71.	Project meetings	2 days (@£120 day)	£240
7.	Analysis of charcoal & preparation for dating	35.25 days	£4,230
7.	Identification material in spearhead	1 day	£120
53.	Environmental Summary report with VS	2 days	£240
70.	Comments on first draft	3 days	£360
75.	Revisions after referee	3 days	£360
78.	Proof reading galleys	3 days	£360
		49.25 days	**£5,910**

Travel costs

Task no:	Tasks	Estimate
4 & 60.	2 day return trips from Hampshire to Bristol @£39.15	£78.30

Archaeological Illustrator
Rosemary Robertson (RR),
Design for Archaeology,
Wheal Daniel Cottage,
North Hill, Chacewater Truro, Cornwall TR4 8NW

The illustrations for this publication will be produced electronically so that they can be stored on computer.

Estimate dated: 21st November 1997
1998-1999 rate @ £110.50 per 6.5 hr day includes hardware and software costs. Meetings costed at £10 pr hour plus travel.
Note travel costs quoted are Standard Open Day Return by train (1997).

Task no:	**Tasks**	**Time**	**Estimate**
4 & 71	Project meetings	2 days (@£70 day)	£140
61 & 62.	Discussion of illustrations	18 days (@£70 day)	£1,260
64.	Preparation of 83 site plans	83 days (@£110.50)	£9,171.50
64.	25 general maps	15.38 days (@£110.50)	£1,700
65	187 Artefact illustrations	57.50 days (@£110.50)	£6,353.75
64.	1 schematic drawing	3 hours	£51
66.	7 Reconstruction drawings	@£400	£2,800
		c.176.50 days +	**£21,476.25**

Travel costs

Task no:	**Tasks**	**Estimate**
4 & 71	2 project meetings Truro to Bristol @£75.00	£150

OTHER SUPPORT STAFF COSTS

-	Computer support costs at CAU -	**Estimate**
	Computer manager John Smith (JS) @£130 x 50 days	£6,500

Table 92 SUMMARY STAFF COSTS at 1998-1999 rates

Team member	Days	Estimate	Travel estimate
Peter Rose, CAU, Truro	27	£3,510.00	£150.00
Project referee	16	£2,400.00	£400.00
Jacky Nowakowski, CAU, Truro	357.5	£46,475.00	£750.00
Peter Herring, CAU, Truro	42	£5,460.00	£150.00
Adam Sharpe, CAU, Truro	28	£3,640.00	£150.00
Henrietta Quinnell, Exeter	166.5	£19,147.50	£50.00
John Davies, Norwich	1	£150.00	-
Stuart Needham, British Museum	1	-	-
Sarnia Butcher, Isles of Scilly	1	£150.00	-
Roger Penhallurick, RCorn Mus, Truro	1	-	-
David Starley, AMlab, London	3	£600.00	-
Carl Thorpe, CAU, Truro	19.5	£2,535.00	£150.00
David Williams, University of Southampton	15	£3000.00	£120.00
Richard Evershed & Assistant, University of Bristol	40	£3,732.00	£150.00
Camborne School of Mines	24	£1,220.00	£30.00
James Greig. University of Birmingham	est 2 = 37	est 2 = £7,400	est 2 = £58.00
Simon Mays, AMlab, London	4	£880.00	£126.00
Dale Serjeantson, University of Southampton	2	£400.00	-
Vanessa Straker, University of Bristol	est.1 = 137.50 est.2 = 109.50	est 1 = £22,341 est2= £17,791.56	_
Technical support, University of Bristol	50.25	£4,554.66	-
Margaret Brooks, Wiltshire Conservation Centre	33	£6,187.50	£62.70
Specialist, Ancient Monuments Lab	6	£1,200.00	-
Roger Taylor, University of Exeter	22	£2,640.00	£32.00
Alison Roberts, Oxford	9	£900.00	£88.00
Philippa Bradley, Oxford	19	£2,375.00	£88.00
Matthew Canti, AMlab, London	6	£1,200.00	£126.00
Jenni Heathcote, Cambridge	10	£1,500.00	£166.00

David Smith, University of Birmingham	7	£1,081.50	£59.20
Rowena Gale, Hampshire	49.5	£5,910.00	£78.30
Rosemary Robertson, Chacewater	176.5	£21,476.25	£150.00
John Smith, CAU, Truro	50	£6,500.00	-
Sub totals - Estimate 1	**1324 days**	**£171,165.41**	**£3,076.00**
Sub totals - Estimate 2	**1333 days**	**£174,015.97**	**£3,134.20**

18.9.7 SCIENTIFIC DATING COSTS

Radiocarbon dating costs - Two quotes have been received dated: 26.11.97

1. East Kilbride, Scottish Universities Research and Reactor Centre, East Kilbride, Glasgow G75 OQU

   64 dates @£250 + VAT = **£16,000 +VAT**

   Received: 23.12.97

2. Radiocarbon Accelerator Unit,
   Research laboratory for Archaeology and History of Art,
   6 Keble Road, Oxford OX1 3QT

   64 dates @£285 + VAT = **£18,240 + VAT**

18.9.8 MATERIALS AND OTHER COSTS

Task no:	Tasks	Estimate
63.	Printing costs for published photographs	£80
20 & 26.	Carriage - stonework and metalwork	£100
38.	Soil analysis - 5 thin sections	£200
35 & 37	Equipment - pollen and plant macrofossil analyses	£362.20
64 & 66	All illustrations - software license	£400
-	Stationery costs	£100
64 & 66	Reprographic costs	£500
-	Postage	£200
		£1,942.20

18.9.9 ARCHIVE STORAGE COSTS

Archive material costs will have to be revised on the completion of a full inventory of the project archive which will be achieved towards the end of the analysis stages of the project (Tasks 32 and 82). At the time of writing guidelines on the system of archive storage for archaeological material at the Royal Cornwall Museum, River Street, Truro were unavailable although in compiling a list of material requirements it has been assumed that all paperwork and artwork must be stored in acid-free containers.

All the paperwork for this project is currently held in labelled cardboard folders held together by green cord treasury tags (with plastic tags) and contained in cardboard banker's boxes or in CAU filing cabinets. The field drawings are held in cardboard folders and the

archive plans are stored in hanging cabinets. The finds are currently stored in standard acid-free archive boxes as are the monochrome negatives and the colour transparencies.

The following estimates are from Conservation Resources UK and Draftline -The Office Shop, Truro.

Estimates dated: 10.12.97 at 1997-1998 prices.

Archive materials	**Estimate**
10 Acid free A4 folders for photographic prints storage called FINE PRINT FOLD PORTFOLIOS FPP1114 (279 x 356 mm) 10 = @£90.00	£90.00
50 Acid free Flat document cases for paperwork 12103 (311 x 260 x 76 mm) MicroChamber ® active quality (50= @ £224.00)	£224.00
300 file folders for paper records AFF911 (241 x 298 mm) 100 = @£35.00	£105.00
100 Archival Expanded gusseted folders EX12 (260 x 311 mm) 100 @ £167.00	£167.00
Acid Free Roll Tubes for archive plans on pencil	c.£100.00
700 Green Cotton Cord Treasury tags with plastic bar Code:2286/51 51 mmpacks of 100 @£1.91	£13.37
Diskette Module Storage Boxes AT2298 50 disk storage capacity @£4.75	£4.75
Miscellaneous office stationery - paper clips, waterproof pens etc.,	£50.00
	£754.12

18.9.10 REPORT PRODUCTION COSTS

Estimate given by Technical Services Dept, Planning Directorate, Cornwall County Council.
Dated: 15.12.97

Report formatting, design and production time **8 weeks**

Task no:	**Tasks**	**Estimate**
76 & 80	Design costs Full colour throughout - colour cover and maps with colour codes Drawings on disc	£1,500

Scan photographs	£4,040
200+ page report	
Estimate for initial print run of 500	£9,900
	£15,440

18.9.11 OVERALL SUMMARY OF COSTS

Explanation of two estimates.

Estimate 1 represents staff costs for the whole team with ***only*** *Vanessa Straker doing the work on pollen analysis. Estimate 2 represents the whole team with James Greig* ***and*** *Vanessa Straker sharing the work on pollen analysis. Costs for scientific dating for both estimates are those provided by The Scottish Universities Research and Reactor Centre, East Kilbride, Scotland. Estimates 1 and 2 presented below are at 1998-1999 rates.*

ESTIMATE 1

Staff Costs (includes computer support)	£171,165.41
CAU Overheads (10%)	£6,812.00
Travel Costs	£3076.20
Scientific dating programme	£16,000 + VAT
Materials and other costs	£1,942.20
Archive costs	£754.12
Report production and printing	£15,440.00
	£215,189.93

Estimate dated: 14.1.98

ESTIMATE 2

Staff Costs (includes computer support)	£174,015.97
CAU Overheads (10%)	£6,812.00
Travel Costs	£3,134.20
Scientific dating programme	£16,000 + VAT

Materials and other costs	£1,942.20
Archive costs	£754.12
Report production and printing	£15,440.00
	£218,098.49

Estimate dated: 14.1.98

Note: The estimates are of 1998-1999 rates. The costs for work in subsequent years will need to be adjusted to allow for inflation. Payments could be made at the suggested monitoring points: (see tables 92 and 93).

Stages 1 and 2 completed: Completion of tasks 1 to 11 when accelerator dates have been received and disseminated.

Stages 3 and 4 completed: Completion of tasks 12 to 33 specialist reports on technological analyses and finds have been received.

Stage 5 completed: Completion of tasks 34 to 40. Specialist reports on environmental analyses have been received.

Stages 6 and 7 completed: Completion of tasks 41 to 58. Structural analyses and framework of report completed.

Stages 8 and 9 completed: Completion of tasks 59 to 73. 2nd draft text and figures available.

Stage 10 completed. Completion of tasks 74 to 83. Final report produced, printed and disseminated, archive deposited and SMR up-dated.

Table 93 Summary Projection of Costs for Estimate 1 - Start date: 5/10/1998 and Completion date: 17/06/2002

Stages	Completion date	Total Estimate at 1998-1999 rates	1999-2000	2000-2001	2001-2002	2002 -2003
1 & 2	12/07/1999	£40,470.19	£42,088.99	-	-	-
3 & 4	17/03/2000	£36,708.90	£38,177.25	-	-	-
5	10/04/2000	£21,408.26	-	£23,155.17	-	-
6 & 7	13/09/2000	£22,438.12	-	£24,269.07	-	-
8 & 9	16/10/2001	£55,332.88	-	-	£62,241.97	-
10	17/06/2002	£38,831.58	-	-	-	£45,427.46
Totals		**£215,189.93**	**£80,266.24**	**£47,424.24**	**£62,241.97**	**£45,427.46**

Table 94 Summary Projection of Costs for Estimate 2 - Start date: 5/10/1998 and Completion date: 17/06/2002

Stages	Completion date	Total Estimate at 1998-1999 rates	1999-2000	2000-2001	2001-2002	2002 -2003
1 & 2	12/07/1999	£40,704.02	£42,332.18	-	-	-
3 & 4	17/03/2000	£36,713.73	£38,182.28	-	-	-
5	10/04/2000	£22,463.65	-	£24,296.68	-	-
6 & 7	13/09/2000	£22,442.95	-	£24,274.29	-	-
8 & 9	16/10/2001	£56,337.71	-	-	£63,372.26	-
10	17/06/2002	£39,436.41	-	-	-	£46,135.02
Totals		**£218,098.47**	**£80,514.46**	**£48,570.97**	**£63,372.26**	**£46,135.02**

Note: Figures for the years 1999-2000, 2000-2001, 2001-2002 and 2002-2003 represent estimated costs which include inflation at a rate of 4% p.a. These figures don't give actual project expenditure within each financial year but indicate amounts to be released on the satisfactory completion of agreed stages.

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